FLOOD PLAIN MANAGEMENT STUDY

FOR

DAHLONEGA
AND
LUMPKIN COUNTY, GEORGIA

SOIL CONSERVATION SERVICE
U.S. DEPARTMENT OF AGRICULTURE

AUGUST, 1983

FLOOD PLAIN MANAGEMENT STUDY

for

DAHLONEGA AND LUMPKIN COUNTY, GEORGIA

Prepared Under A
Joint Coordination Agreement

With

GEORGIA DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

By

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Athens, Georgia

In Cooperation With

LUMPKIN COUNTY
CITY OF DAHLONEGA
UPPER CHATTAHOOCHEE RIVER SOIL AND WATER CONSERVATION DISTRICT

August 1983

CONTENTS

	Page
Introduction	1
Study Area Description	1
Natural Values	3
Flood Problems	5
Existing Flood Plain Management	5
Flood Plain Management Alternatives	6
Maintain Present Condition	6
Land Treatment	6
Nonstructural Measures	7
Structural Measures	8
Preservation of Natural Values	9
Table 1 - Study Reaches	2
Table 2 - Flood Hazard Areas	5
Table 3 - Potential Structure Sites	8
Appendix A - Flood Profiles	
Appendix B - Water Surface Elevations Summary of Discharges	
Appendix C - Investigations and Analyses Glossary of Technical Terms References	
Appendix D - Elevation Reference Marks	

FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN COUNTY, GEORGIA

Introduction

During the decade of the 1970's, the population of Lumpkin County increased by 23 percent; housing units increased by 50 percent. Much of the upland is unsuited for building sites because of steep slopes; other uplands can be used, but site preparation costs are high. These factors have caused an increased use of flood plains for permanent residences, mobile homes, "second homes," and limited commercial developments. Most of the commercial developments and subdivisions are within and near the Dahlonega city limits. Isolated residences, mobile homes, and "second homes" are scattered throughout the study area flood plain.

The Lumpkin County Commission and the Dahlonega City Council requested a flood plain management study (FPMS) in order to obtain detailed information concerning flood hazards of various frequency floods. Such information will be used to develop an effective flood plain management program.

Lumpkin County and Dahlonega requested an FPMS in February 1981, submitting their request to the Upper Chattahoochee River Soil and Water Conservation District (S&WCD). The S&WCD, as cosponsor, forwarded the request to the Georgia Department of Natural Resources (DNR). After reviewing the request, DNR concurred in the need for the FPMS. DNR assisted in scoping, along with the city, county, and S&WCD. Lumpkin County provided assistance throughout the study, including providing public information, acquiring access permits for field surveys, and supplying survey crew members. The Upper Chattahoochee River S&WCD assisted in the public information program.

SCS assists State agencies and communities in the development and implementation of their flood plain management programs by carrying out cooperative FPMS under authority of Section 6 of Public Law 83-566. Studies are made in accordance with Executive Order 11988 and Federal Level Recommendation 3 of "A Unified National Program for Flood Plain Management."

Field surveys of valley cross sections and road crossings represent conditions as of January 1982. Peak discharges were computed using a frequency analysis of the stream flow at the U.S. Geological Survey gaging station on Chestatee River near Dahlonega. Flood profiles have been computed using the SCS WSP-2 computer program.

Study Area Description

Yahoola Creek and its tributaries drain the north central portion of Lumpkin County. The upper portion of the drainage area lies on the south slope of the Blue Ridge foothills with very steep slopes. Much of

this area is within the Chattahoochee National Forest. The reaches studied are in the upper Piedmont Plateau, an area characterized by moderate to steep slopes. Flood plain in the study reaches is extensively used for agriculture. The drainage area at the downstream study limit on Yahoola Creek is approximately 30 square miles. Selected drainage areas are tabulated in Appendix B.

Tanyard Branch, which converges with Yahoola Creek downstream from the Yahoola study limit (see photomap index) heads in Dahlonega and drains about 500 acres of residential and commercial areas of the city. Cane Creek and tributaries drain the area northwest of Dahlonega. The upper drainage area is on the south slope of the Blue Ridge foothills and is largely in forest. Study reaches are in the upper Piedmont Plateau, with much of the flood plain in agricultural use. Two tributaries (Happy Hollow Creek and Tributary C) head near the center of Dahlonega, and recent residential development has occurred in these flood plains. The drainage area at the downstream study limit on Cane Creek is about 24 square miles.

Left Fork Cavender's Creek and Peck's Mill Creek are located in the eastern portion of the county and have drainage areas of 1.8 and 3.0 square miles, respectively. Both are within the upper Piedmont Plateau. The flood plain along Left Fork Cavender's Creek is extensively used for agriculture, whereas that of Peck's Mill Creek is in moderate agricultural usage.

All studied streams are tributaries to the Chestatee River and are within Hydraulic Unit 03130001. The length of each reach studied and the study intensity are shown in Table 1.

TABLE 1 - STUDY REACHES

Stream	Length in Miles	
	Detail Study	Limited Detail Study
Yahoola Creek	10.1	2.4
Ward Creek and Unnamed Tributary	2.4	1.3
Tributary A	0.3	
Tributary B	1.6	
Robison Creek	0.7	
Cane and Little Cane Creeks	5.1	
Crooked Creek	0.3	
Tributary C	0.9	0.3
Happy Hollow Creek	0.9	
Clay Creek	3.3	0.7
Dowdy Branch	0.9	
Tributary E	0.4	
Tributary D	0.6	
Tanyard Branch	0.8	
Left Fork Cavender's Creek	1.4	1.1
Peck's Mill Creek		2.4
Total	29.7	8.2

The upland drainage area of all study reaches is comprised largely of three soil associations, namely Hayesville-Fannin-Edneyville, Tallapoosa-Musella, and Edneyville-Porters-Ash. These soils are typically sloping to steep, with slopes up to 70 percent. Most of the area is wooded, with only a small acreage in cultivated crops and pasture. Because of the slope, only small areas of these soils, chiefly on ridgetops, are suited to buildings, highways, and recreation areas.

Most of the flood plain soils are of the Cartecay-Toccoa-Congaree Association. These soils are nearly level to very gently sloping and are somewhat poorly drained to well-drained. Areas of this association are widely scattered and are discontinuous along the streams. Except for the small acreage which is too wet for cultivated crops, these soils are extensively used for agriculture.

The mean annual temperature is 59 degrees F., varying from a mean of 41 degrees in January to 76 degrees in July. Temperature is 90 degrees or more for less than half the days during June, July, and August. The average freeze-free period is about 200 days, extending from mid-April to late October. Precipitation averages 62 inches annually and varies from 3.4 inches in October to 7.2 inches in March.

Natural Values

Within these narrow flood plains, man has influenced the natural values more than in adjacent upland areas. However, even with man's modification of these natural communities, wildlife has not been adversely affected. Rabbits, deer, quail, and mourning doves benefit from the diversity of plant communities resulting from man's modifications.

Native tree species associated with the soils of the flood plains consist of sweetgum, elm, alder, oak, sycamore, hickory, yellow poplar, maple, and white pine. Understory vegetation consists of such plants as viburnum, rhododendron, mountain laurel, smilax, honeysuckle, wild azalea, hydrangea, sweet shrub, and dogwood.

With respect to wildlife habitat, the undisturbed flood plain areas provide good habitat for white-tailed deer, gray and red fox, gray squirrel, opossum, raccoon, and a variety of small birds and mammals.

The acreage of wetlands within the study area is small. The undisturbed areas of native vegetation are Type 1. Some small areas of Type 2 occur in pastures within the flood plains of most streams.

Endangered and threatened plants and animals that may occur are: southern bald eagle, Indiana bat, and cougar on the Federal list; and yellow lady slipper (Cyprepedium calceolns var. pubescens) on the Georgia list.

Yahoola Creek and tributaries upstream from Georgia Highway 52 are classified as primary trout streams by Georgia DNR. Cane Creek and tributaries upstream from Georgia Highway 9 are classified as primary trout streams, except the reach of Cane Creek from Cane Creek Falls downstream to Georgia Highway 9, which is a secondary trout stream. The entire study reach on Left Fork Cavender's Creek is also classified as a primary trout stream.

Fish that are present include such species as brown and rainbow trout, spotted bass, redeye bass, redhorse sucker, hog sucker, sculpins, blackbanded darter, creek chub, and other miscellaneous minnows. Conversion of land to agricultural production within the flood plain has had a negative impact on fish habitat.

Water quality in some stream reaches is adversely impacted due to the practice of clearing flood plains to the creek banks. Sediment from cropland and from streambank erosion enters the streams. Other reaches, where flood plains are not cleared and where corridors of vegetation line the streams, enjoy better water quality. The Dahlonega sewage treatment plant discharges into Yahoola Creek near the downstream study limit.

Emphasis should be given to the establishment of stream corridors in areas along the streams where vegetation is lacking. This would involve permitting native vegetation to become established along the stream channels in cropland and pastureland areas. The major impact of these corridors would be to improve water quality and fish habitat by decreasing stream temperatures and reducing the amount of sediment and other pollutants reaching the streams.

About 65 percent of the county is in forest. Agricultural and urban land uses are on the flatter slopes and flood plains. Some 60 percent of the study area flood plain is used for agriculture and urban purposes. Dominant soils in the flood plain are of the Cartecay-Toccoa-Congaree Association. There are no large blocks of urban development in the flood plain; development consists of mostly individual residences and other buildings scattered throughout the study area. Most of these buildings are of recent construction. Pasture and corn dominate the agricultural use of the flood plain. Some acres are idle or in hay or truck crops. Pasture and corn are also the principal agricultural uses of the uplands; secondary uses include idle, hay, small grains, truck crops, and orchards. Prime farmland accounts for 8,700 acres, less than 5 percent, of the county. Within the study area flood plain there are about 120 acres of prime farmland. These are in small plots, mostly less than 10 acres each, and are distributed throughout the study area.

A cultural resource assessment (literature search) made by the Georgia DNR identified two sites, one an Indian village and the other a stone mound, near Cane Creek Falls. Preservation of these sites should be considered a part of any land use planning. Flood plains are usually the topographic areas most likely to contain significant buried aboriginal and historic sites and are usually considered culturally sensitive for that reason. Investigations to identify presently unknown archaeological and historic sites should also be considered a part of any land use planning.

Flood Problems

A recent damaging flood occurred in April 1979. This flood was estimated to be a 25-year frequency event. Damages from this flood were estimated to be $250,000, with about 40 percent of this amount being agricultural damages. Agricultural damages consist of losses of crops and pasture, sediment and scour damages, fence damage, and disruption of conservation measures. Nonagricultural damages were largely to road crossing structures. An estimated 900 acres were inundated by this flood; 500 acres were farmland. The largest flood of record, that of August 1967, was nearly a 100-year frequency event. Detailed data regarding damages are not available for this flood.

The 100-year flood which can be expected to occur in the future will inundate 1,435 acres in the study area. Current farmland in the flood plain is shown in Table 2. Flood hazard areas for the 100-year and 500-year floods are shown on the photomaps presented in this report. Some 23 structures are within the 100-year flood hazard area, including 21 residences and 2 commercial buildings.

TABLE 2 - FLOOD HAZARD AREAS

Stream	100-Year Flood Plain (Acres) Farmland	Total
Yahoola Creek & Tributaries	512	756
Cane Creek & Tributaries	313	559
Left Fork Cavender's Creek	30	64
Peck's Mill Creek	16	56
Totals	871	1,435

Existing Flood Plain Management

Dahlonega and Lumpkin County have Federal Insurance Administration (FIA) flood hazard boundary maps at the present time. These maps are of a general nature, and their use is in specific regard to federally subsidized construction. Dahlonega has adopted an ordinance which specifies that attempts should be made to minimize damages from floods to buildings, subdivision plans, and water and sewage facilities. This ordinance complies with the demands of FIA criteria of the National Flood Insurance Program.

Lumpkin County and the City of Dahlonega have adopted the State Sediment and Erosion Control Act. Any major land disturbing activity will have to receive a permit. Permits are not issued until an adequate erosion control plan is designed by the developer. These plans are to be reviewed by the Upper Chattahoochee River Soil and Water Conservation District for technical feasibility and concurrence with accepted erosion control standards. An adequate erosion and sediment control plan is a necessity for sound land development. Procedures for carrying out the ordinance comply with provisions of the Georgia Erosion and Sedimentation Act of 1975.

Both city and county have subdivision regulations that control, in a general sense, the design and layout of housing developments. These ordinances are heavily dependent on design engineering factors and pay cursory attention to natural resource based factors.

Local participation was an important factor in the scoping meeting for the study. The public was receptive to the study results presented at the completion of the technical studies. Public opinion is that now is the time to implement a flood plain management program. At present, the study area has relatively little building in the flood plains and has not experienced the devestating, widespread flooding common in some nearby developed areas.

Flood Plain Management Alternatives

Proper management of the flood plain can minimize flood damages in most flood hazard areas. Several alternatives are available which could be used by Dahlonega and Lumpkin County to improve management of the flood plains. The alternatives are discussed in this section.

Maintain Present Condition - The present condition, with existing development and the chance for future development within the flood hazard areas, could lead to intensified flood problems. Properties presently located in the flood plain will continue to be flooded. Intensity and frequency of flooding may increase due to increased runoff from uplands undergoing the land use changes of urbanization. New developments may occur in the flood plain and, of course, be subject to flooding.

Land Treatment - Vegetation protects the soil from the impact of raindrops, and the root system binds the soil, thus reducing erosion. Conservation land treatment practices can be applied to bare and poorly vegetated areas to reduce runoff, erosion, and sediment delivery to stream channels. Adequate vegetative cover reduces runoff and erosion by allowing rainfall to penetrate open spaces around roots and to be absorbed by plant roots. Additional water is stored in the layer of humus formed by decaying organic matter. Some of this water is put into the atmosphere by plant transpiration, thus reducing runoff.

Most of the critical areas in the study area are dirt roads and jeep trails, many on very steep slopes, and roadbanks. Other critical areas are idle land and abandoned pastures. Application of the proper management practice (e.g. tree and grass planting, lime and fertilizer application) may reduce runoff and sediment from these areas.

Sediment deposited in the stream channels reduces their capacity to carry flow, thereby increasing the amount of flooding. The current ordinances regarding sediment and erosion control have been an important means for controlling sediment from new construction sites. As construction accelerates, it will become more important to enforce these ordinances in order to minimize the amount of sediment reaching the streams.

As land use in the uplands changes from agricultural or forest to urban, the ensuing concentration of buildings, paved parking lots, roads, and other impervious surfaces may dramatically increase the amount and rate of runoff. This will result in more severe flooding in the flood plain. Wise land use management of the uplands can be an important step toward controlling flooding on the lowlands. Tanyard Branch, Happy Hollow Creek, and Tributary C would be particularly sensitive to changes in upland land use. These streams have small drainage areas which are at present partly developed.

Nonstructural Measures - Nonstructural measures are flood protection measures which are usually applied to individual buildings, differing from the conventional structural flood protection methods such as dikes and dams which are commonly designed to protect groups of buildings. Nonstructural measures include land use regulations, flood insurance, floodproofing, and relocation. They may be used to alleviate the impact of existing flooding and to reduce susceptibility to future flooding. Most likely a combination of alternatives will be necessary to achieve the desired results.

Land use regulations can be used to effectively reduce future susceptibility. By providing direction to growth and change, regulations are well suited to preventing unwise flood plain occupancy. Wise land use should also be applied to areas other than flood plains. Increased rates of runoff caused by impervious surfaces such as parking lots, roofs, and streets will cause more frequent and severe flooding in the Tanyard Branch and Happy Hollow Creek flood plains. Consideration should be given to measures designed to reduce or delay runoff. (Examples of such measures may be found in reference source 13 listed on page 4 of Appendix C.

Dahlonega is currently enrolled in the Emergency Flood Insurance Program; Lumpkin County is not currently enrolled. Both city and county have realized the importance of detailed flood plain data to the implementation of an effective flood plain management program. The flood plain data presented in this report may be sufficient for use in preparing and implementing an effective program and to enroll in the regular flood insurance program. Under the regular program, those properties now in flood prone areas would be eligible for flood insurance at reasonable cost. Also, the city and county would need to adopt a flood plain management program to protect new construction from future flooding.

The flood hazard area photomaps which follow this section can be used to identify the 100-year and 500-year flood hazard areas.

Flood profiles for the 10-year, 50-year, 100-year, and 500-year floods are presented in Appendix A. Also shown are the locations of surveyed cross sections and road crossings.

To determine the flood hazard at a specific site, the following procedure is suggested:

1. Locate the site on the appropriate photomap sheet.

2. Scale the distance from the site to the nearest cross section.

3. Locate the cross section on the appropriate flood profile sheet (Appendix A); then plot the site the appropriate distance from the cross section. Flood elevations at the site can now be read from the flood profiles.

The on-ground mean sea level (MSL) elevation of the site should be determined by an acceptable survey procedure. Elevation reference marks (bench marks) are shown on the photomaps and are described in Appendix D.

Floodproofing can be used for existing structures in the flood plain as well as for new construction. It consists of raising buildings above the 100-year flood elevation. Existing buildings can be jacked up and foundations and plumbing extended. Seven mobile homes and eight frame homes could be floodproofed in this way by elevating them 4 feet or less. Three mobile homes and one frame home would have to be elevated more than 4 feet. Relocation would be more practical for these homes. Each could be moved a short distance to a site which would be higher than the 100-year flood.

Structural Measures - The Chestatee-Chattahoochee Resource Conservation and Development Project Report made in 1970 identified three floodwater retarding structure sites in the study area. These potential structures were identified as No. 77 on Clay Creek just upstream from Oak Grove Road, No. 78 on Little Cane Creek about 1 mile upstream from Wash Ridder Road, and No. 82 on Ward Creek about 1.5 miles upstream from Cavender's Creek Church Road. Some of the site statistics are shown in the following table.

TABLE 3 - POTENTIAL STRUCTURE SITES

Site No.	Drainage Area (square miles)	Permanent Pool (acres)	Installation Cost (1970 Estimate)
77	2.5	9	$78,000
78	0.7	7	52,000
82	1.6	5	79,000

These structures would give a degree of protection to some flood plains, but would not provide protection from the 100-year flood. The structures were economically justified based on 1970 benefit-cost analyses.

Preservation of Natural Values - Serious consideration should be given to preservation of wetlands, unique areas, undeveloped flood plains, and bluffs adjacent to the streams which have high values for education, recreation, natural water treatment, ground water recharge, and moderation of floods.

The flood plain moderates flooding by providing an area where floodwater can spread out and be temporarily stored. Vegetated flood plains slow the rate at which incoming overland flow reaches the channel. Such practices as clearing, compacting, paving, filling, and building within the flood plain can cause increased flood elevations and frequencies. The adverse impact of this increased flooding must be considered. By maintaining the natural floodwater carrying capacity of the flood plain, many future flood problems may be avoided.

Also, encouragement of stream corridors or greenbelts along both sides of these creeks, particularly areas used for urban, pasture, and crops, will help reduce sediment loads in the streams. This greenbelt of stream corridor should be 50 to 100 feet wide landward from the top of each streambank. This would maintain riparian vegetation, prevent bank erosion and collapse, avoid accelerated sedimentation of the creeks, and maintain habitats for living resources--particularly fish and wildlife.

The unique scenic and recreational values of Clay Creek Falls and Cane Creek Falls are well known locally. Highest priority should be given to preserving these and similar areas.

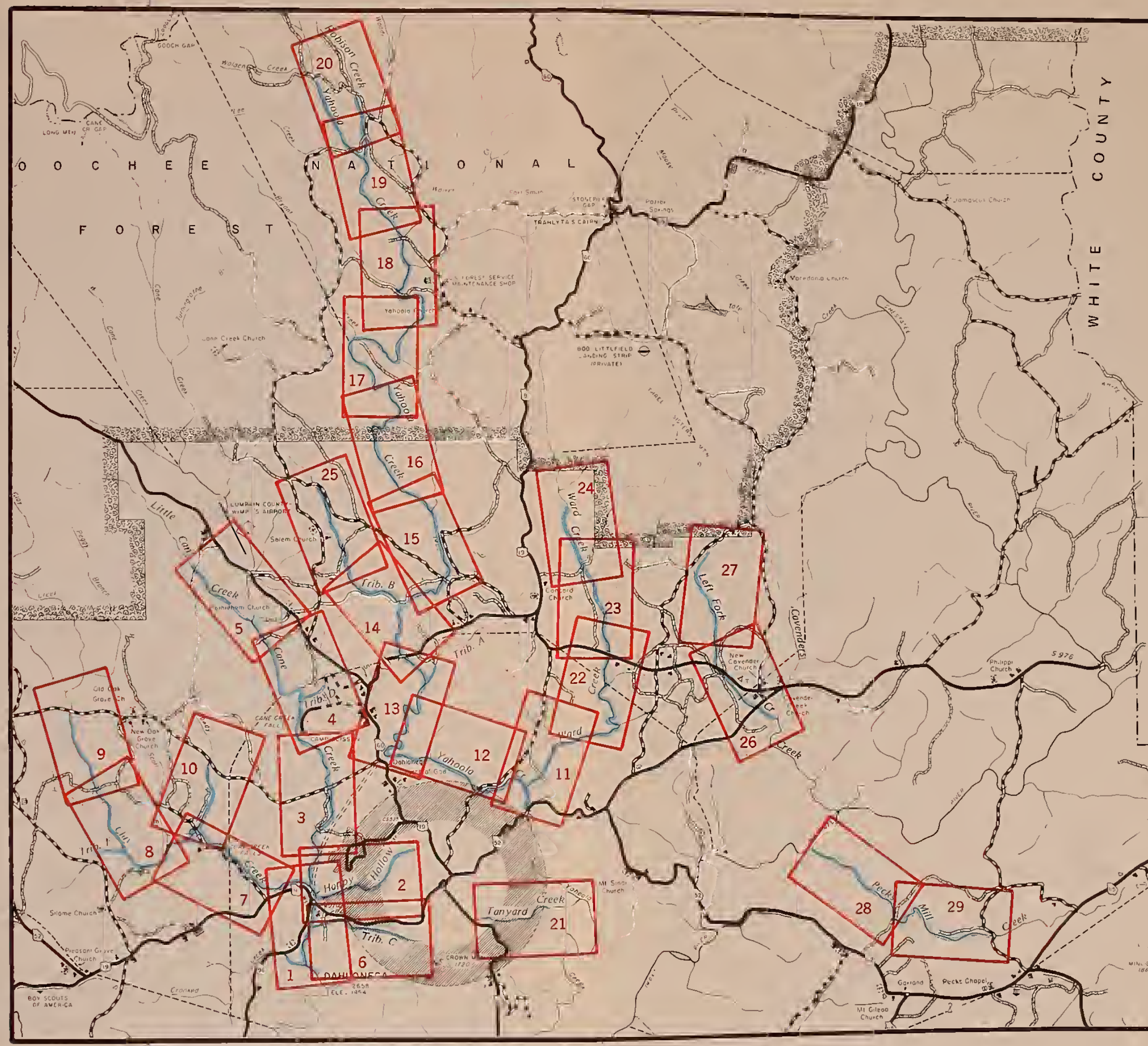
Preservation of archaeological and historical sites should be considered a part of any land use planning.

PHOTOMAP INDEX

AND

FLOOD HAZARD AREA PHOTOMAPS

PHOTOMAP INDEX



N

LEGEND

- City Limits
- County Line
- Stream
- 6 — Photomap Sheet Area Coverage
- Flood Hazard Study Area

0 1 2 3 Miles
0 1 2 3 4 Kilometers
SCALE

GEORGIA

Base prepared by the Georgia Department of Transportation

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SHEET 1 OF 1

MATCH TO SHEET 7

STUDY LIMIT

133

TBM 14

Clay Creek

TBM 13

Dirt Road

MATCH TO SHEET 2

Cane Creek

STUDY LIMIT

137

105

Torrington Road

Happy Hollow Cr

TBM 85

MATCH TO SHEET 2

103

TBM 11

9

Tributary C

Auraria Road

TBM 90

302

MATCH TO SHEET 6

12

STUDY LIMIT

Crooked Creek

Cane Creek

TBM 27

101

N

100

STUDY LIMIT

TBM 29

LEGEND

X	Elevation Reference Marks
	100 Year Flood Hazard Area
	500 Year Flood Hazard Area
	Cross Section Location
	Stream Channel

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 1 OF 29

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COUNTY, GEORGIA

FLOOD HAZARD AREA

CANE CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

400 0 400
Scale in Feet

100 0 100
Scale in Meters

Photography by
ASCS 1-24-81

SHEET 2 OF 29

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FLOOD HAZARD AREA

CANE AND HAPPY HOLLOW CREEKS

LEGEND

X	Elevation Reference Marks		Cross Section Location
	100 Year Flood Hazard Area		Stream Channel
	500 Year Flood Hazard Area		

400 0 400
Scale in Feet

100 0 100
Scale in Meters

Photography by
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SHEET 3 OF 29

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COUNTY, GEORGIA

FLOOD HAZARD AREA

CANE CREEK

MATCH TO SHEET 5

TBM 40

118

Cane Creek

Norrels Road

117

TBM 41

STUDY LIMIT

TBM 38

164

Ranger Camp Road

Dirt Road

160

Tributary D

114

TBM 35

Creek

MATCH TO SHEET 3

N

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
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400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 4 OF 29

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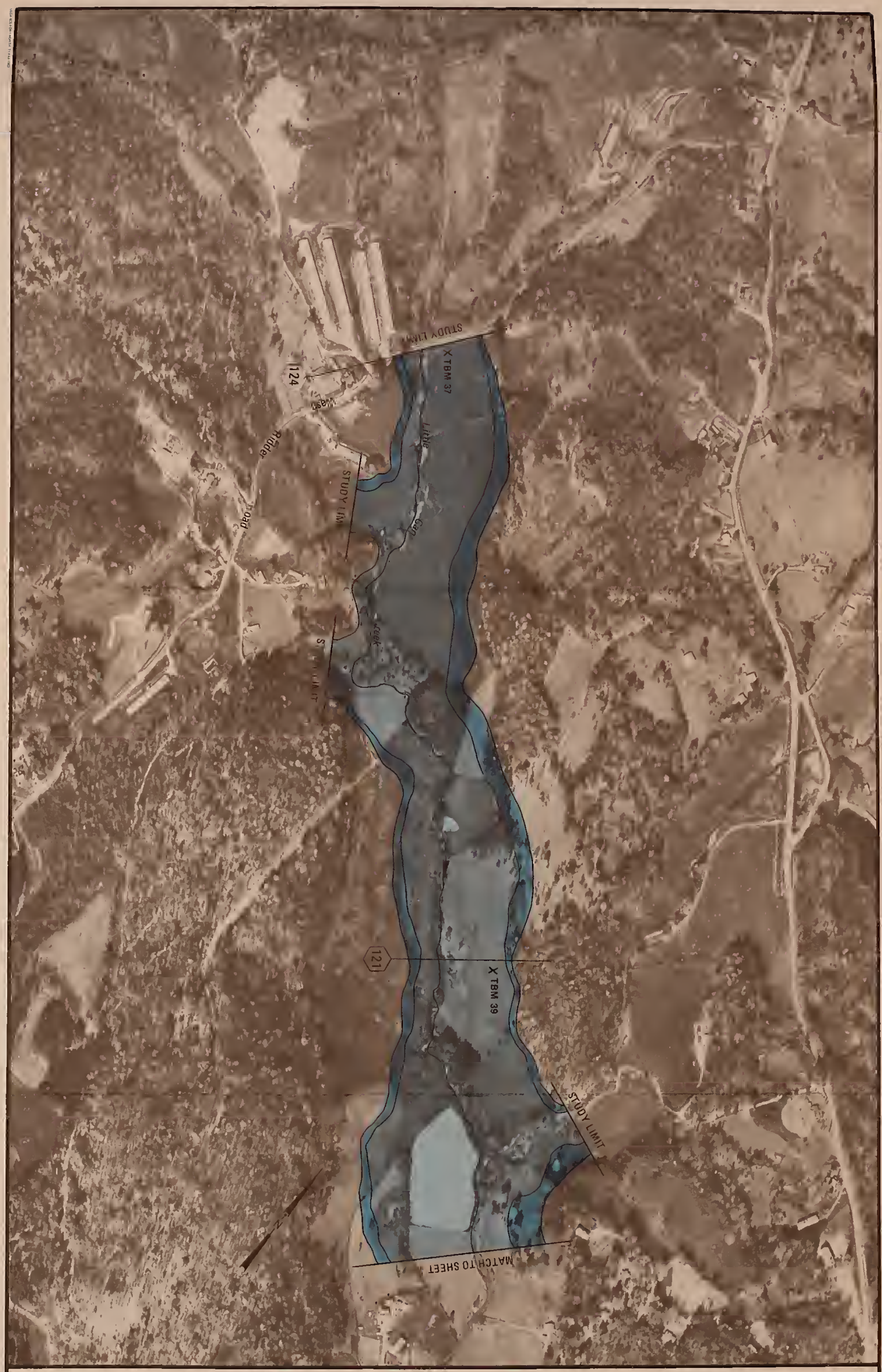
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

CANE CREEK



LEGEND

X	Elevation Reference Marks		Cross Section Location
	100 Year Flood Hazard Area		Stream Channel
	500 Year Flood Hazard Area		

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 5 OF 29

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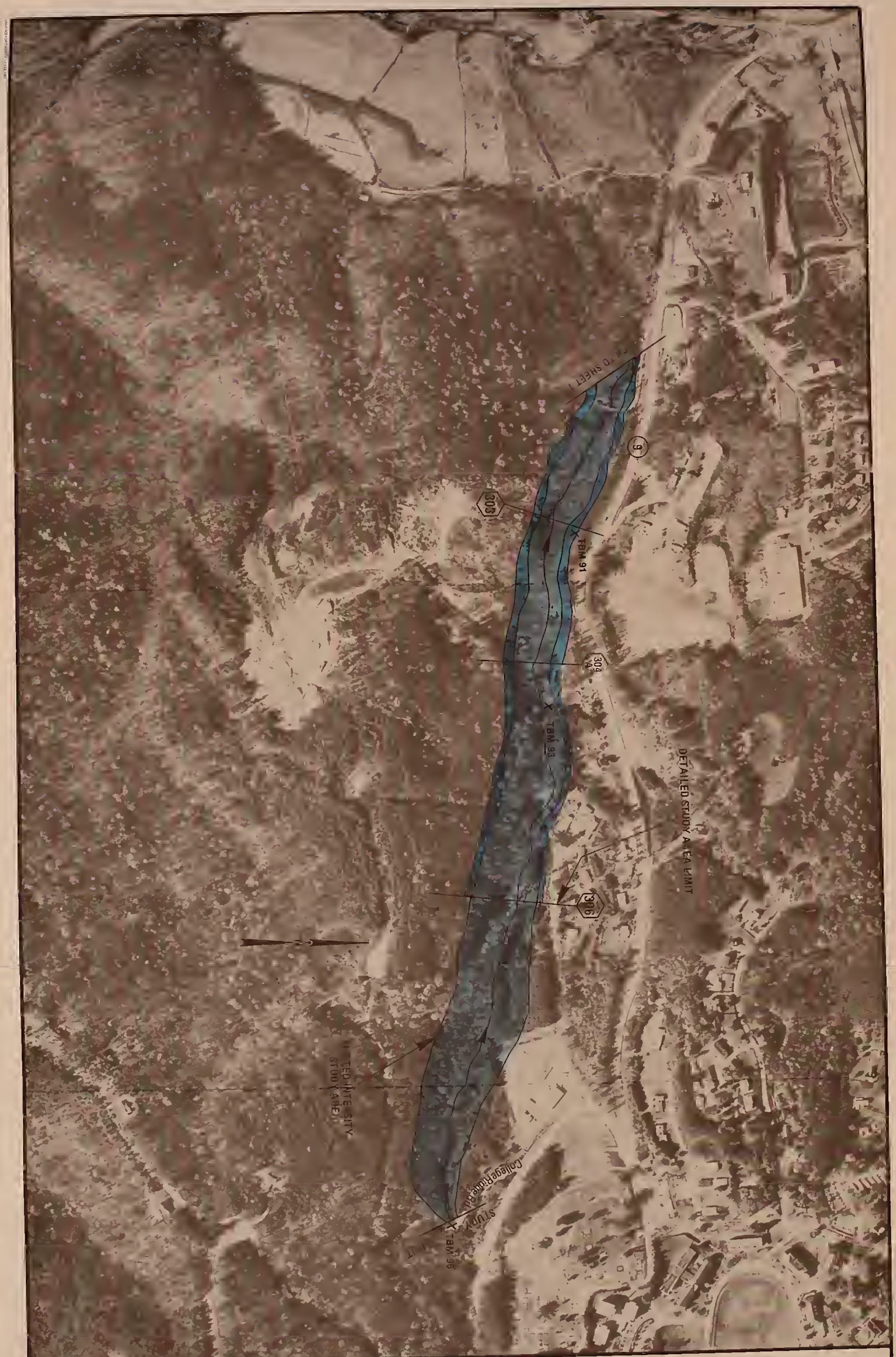
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

LITTLE CANE AND CANE CREEKS



LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
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400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 6 OF 29

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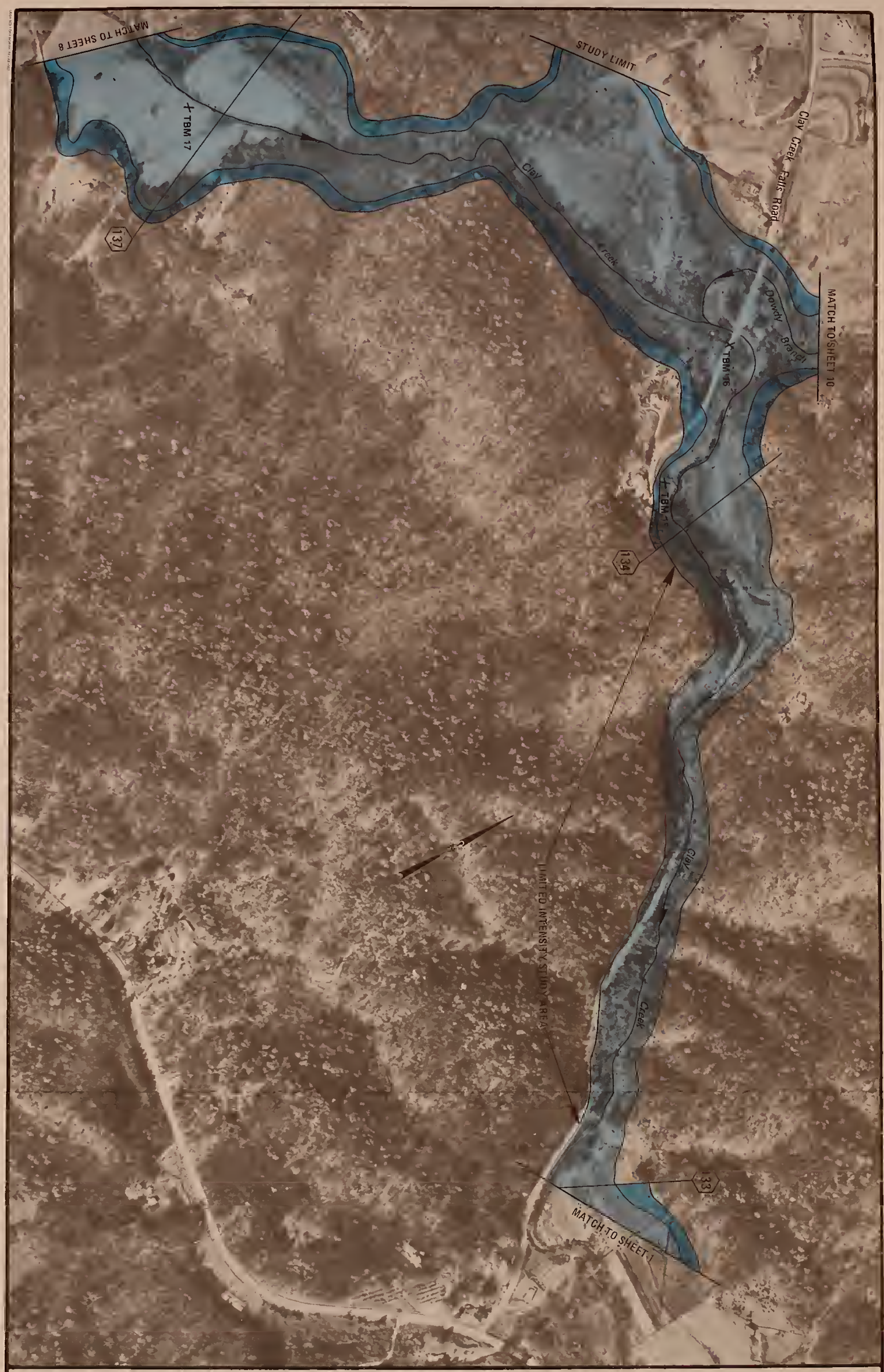
COUNTY, GEORGIA

FLOOD HAZARD AREA

TRIBUTARY C



LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
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400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 7 OF 29

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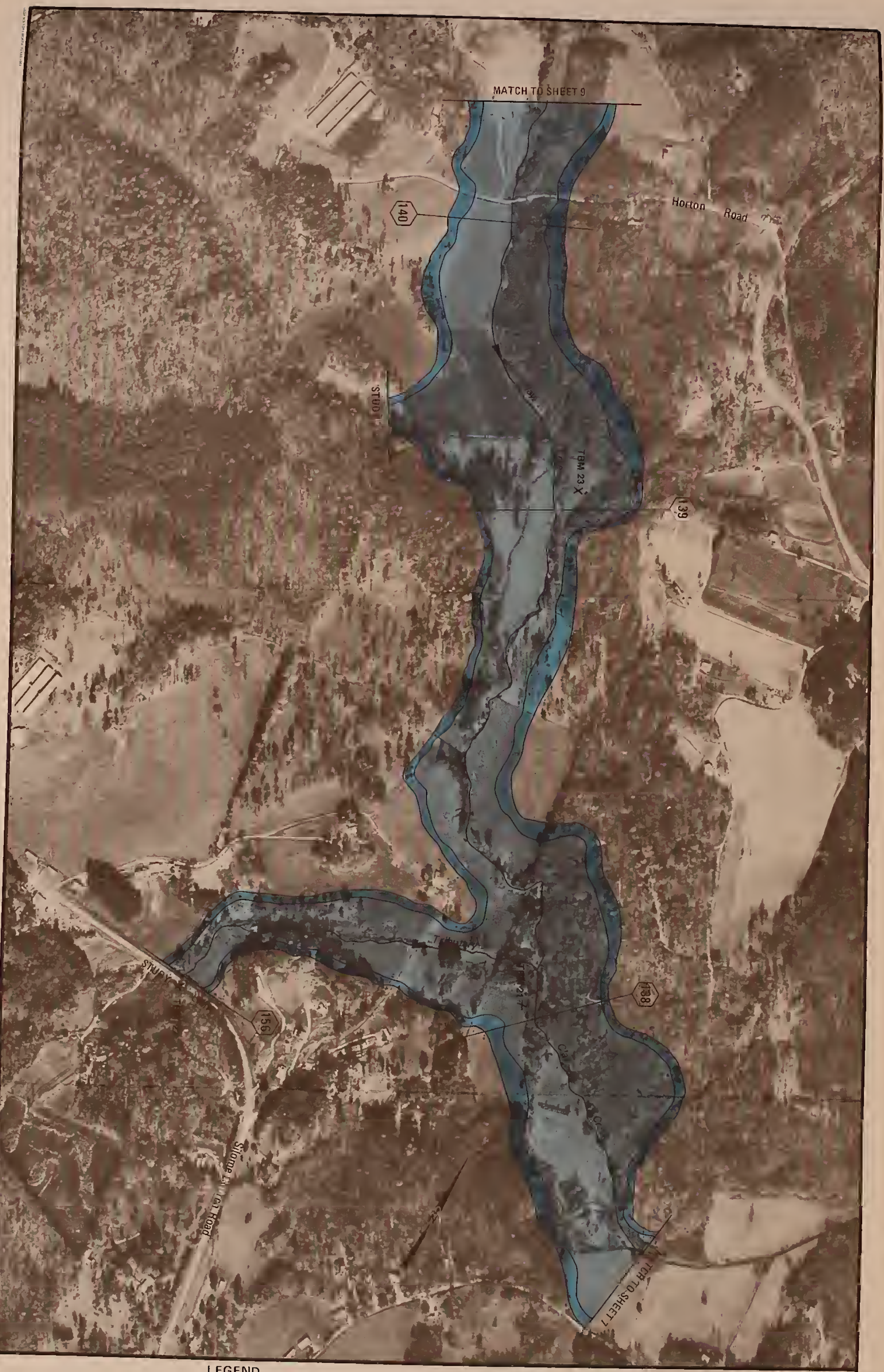
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

CLAY CREEK



LEGEND

X Elevation Reference Marks

100 Year Flood Hazard Area

500 Year Flood Hazard Area

Cross Section Location

Stream Channel

400 0 400
Scale in Feet

100 0 100
Scale in Meters

Photography by
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SHEET 8 OF 19

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DAHLONEGA AND LUMPKIN
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FLOOD HAZARD AREA

CLAY CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

400 0 400
Scale in Feet

100 0 100
Scale in Meters

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SHEET 9 OF 29

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DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

CLAY CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
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400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 10 OF 29

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DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

DOWDY BRANCH

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 11 OF 29

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COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA AND WARD CREEKS

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 12 OF 29

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FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 13 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 14 OF 29

U. S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK AND TRIBUTARY A

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

400 0 400
Scale in Feet

100 0 100
Scale in Meters

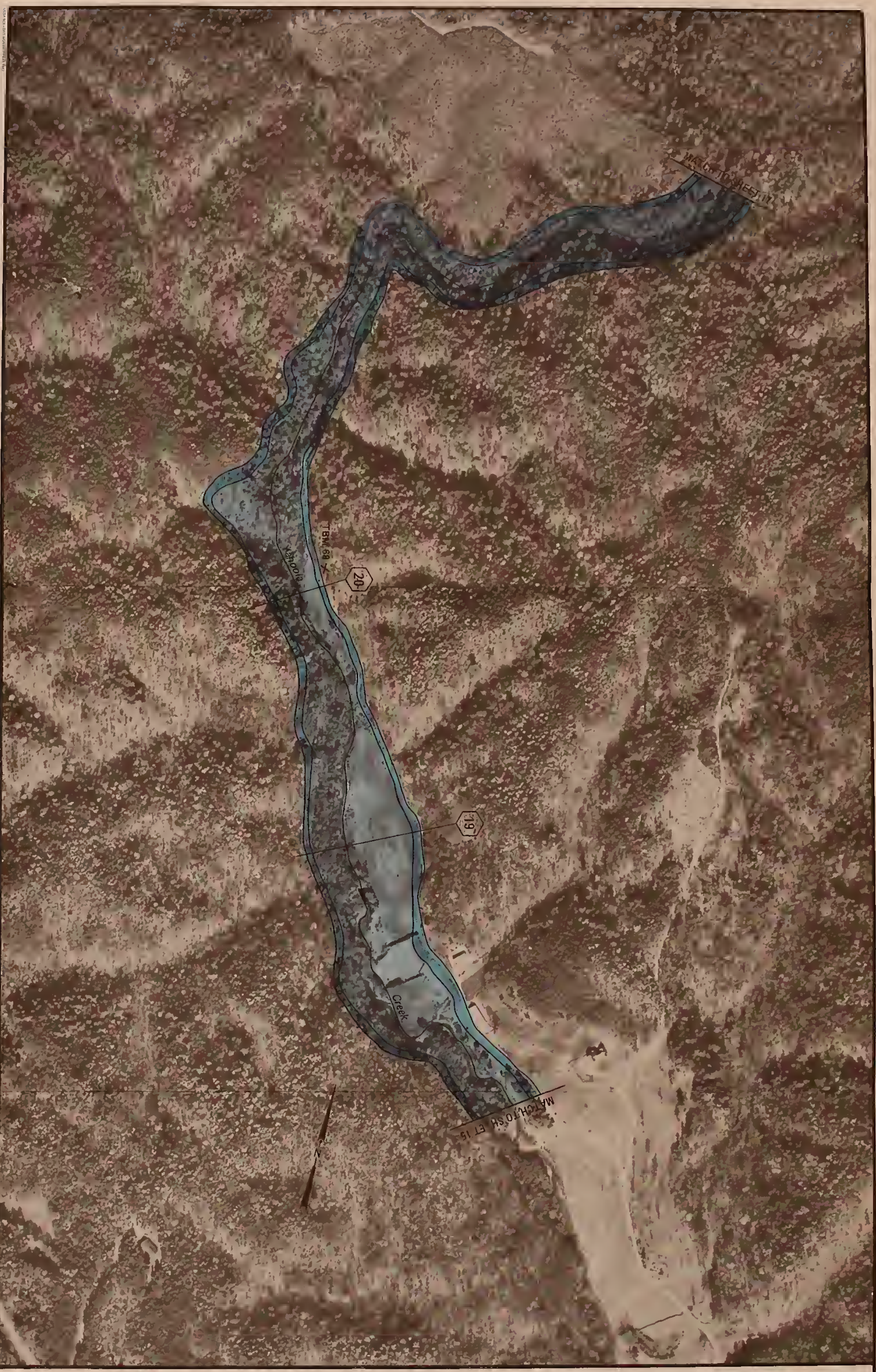
Photography by
ASCS 1-24-81

SHEET 15 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK



LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 16 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 17 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK

LEGEND

X Elevation Reference Marks

100 Year Flood Hazard Area

500 Year Flood Hazard Area

Cross Section Location

Stream Channel

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 18 OF 29

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA CREEK

LEGEND

X Elevation Reference Marks

100 Year Flood Hazard Area

500 Year Flood Hazard Area

Cross Section Location

Stream Channel

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

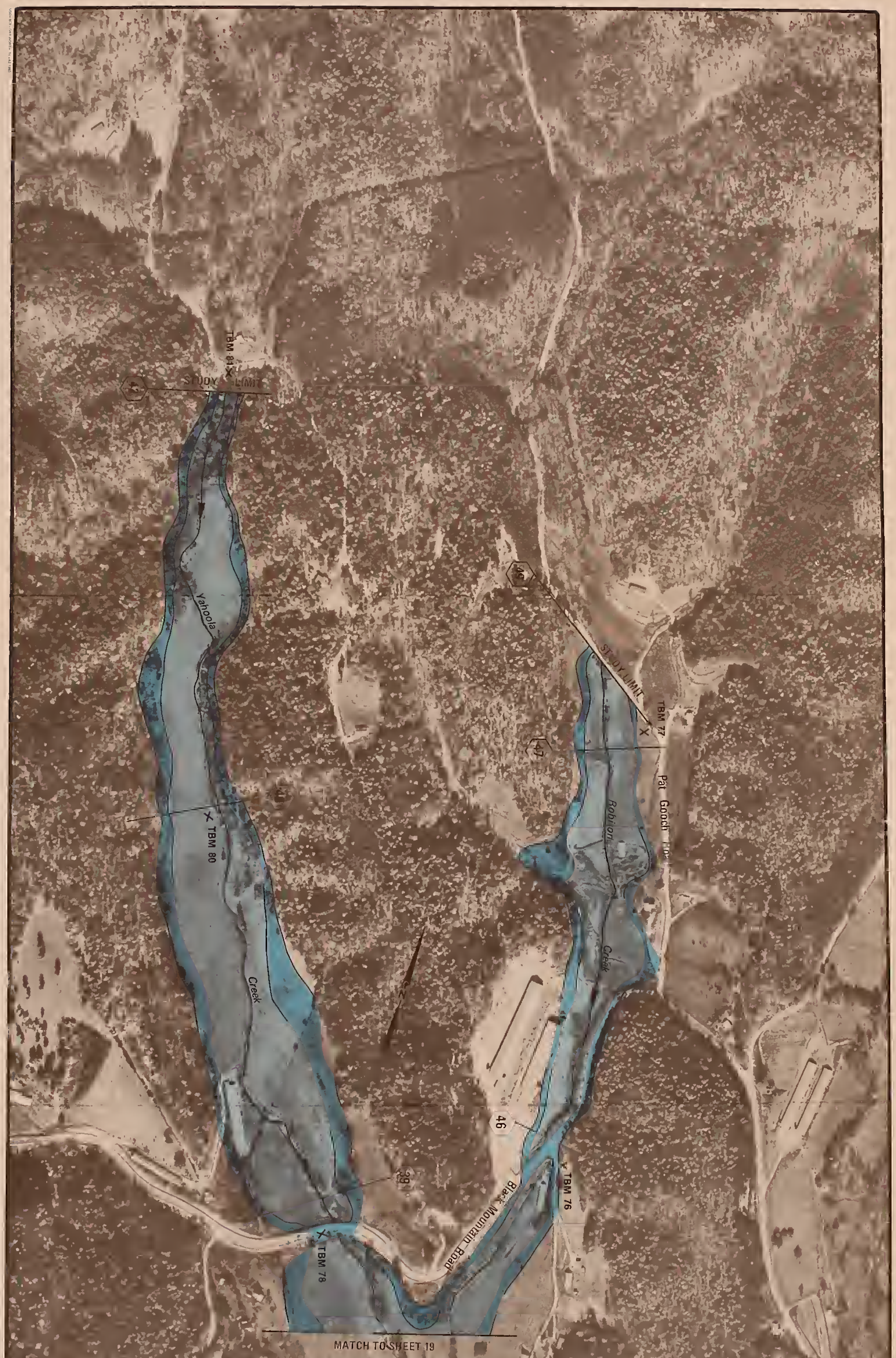
100 0 100
Scale in Meters

SHEET 19 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA AND ROBISON CREEKS



LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

400 0 400
Scale in Feet

100 0 100
Scale in Meters

Photography by
ASCS 1-24-81

SHEET 20 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

YAHOOLA AND ROBISON CREEKS

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 21 OF 29

U. S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

TANYARD BRANCH

MATCH TO SHEET 11

Ward

Creek

TBM 46

TBM 47

STUDY LIMIT

69

69

Cavender Creek Church Road

MATCH TO SHEET 23

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography By
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 22 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

WARD CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

500 Year Flood Hazard Area

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 23 OF 29

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

WARD CREEK

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

400 0 400
Scale in Feet

100 0 100
Scale in Meters

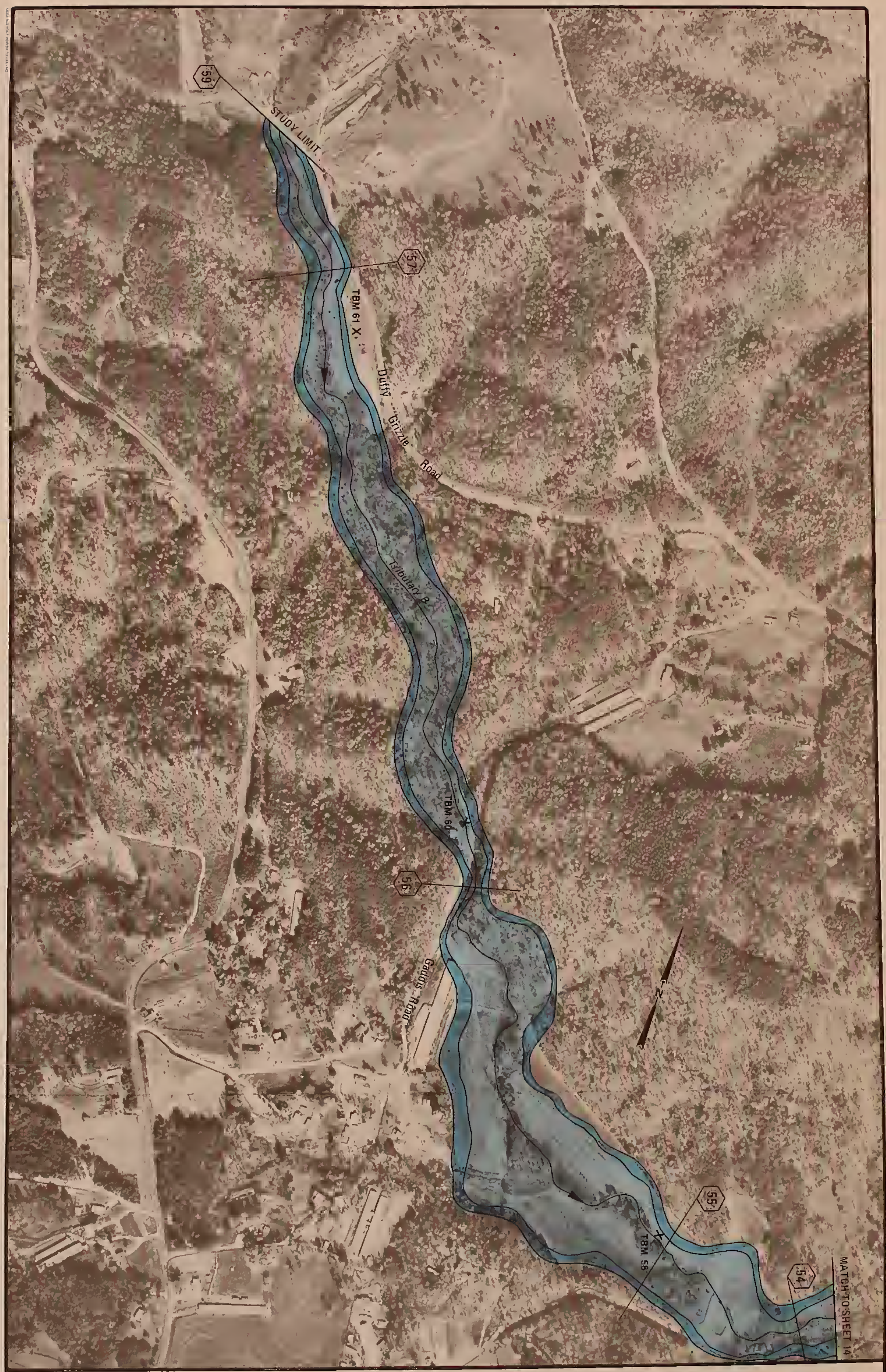
Photography by
ASCS 1-24-81

SHEET 24 OF 29

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

WARD CREEK



LEGEND

X	Elevation Reference Marks		Cross Section Location
	100 Year Flood Hazard Area		Stream Channel
	500 Year Flood Hazard Area		

400 0 400
Scale in Feet

100 0 100
Scale in Meters

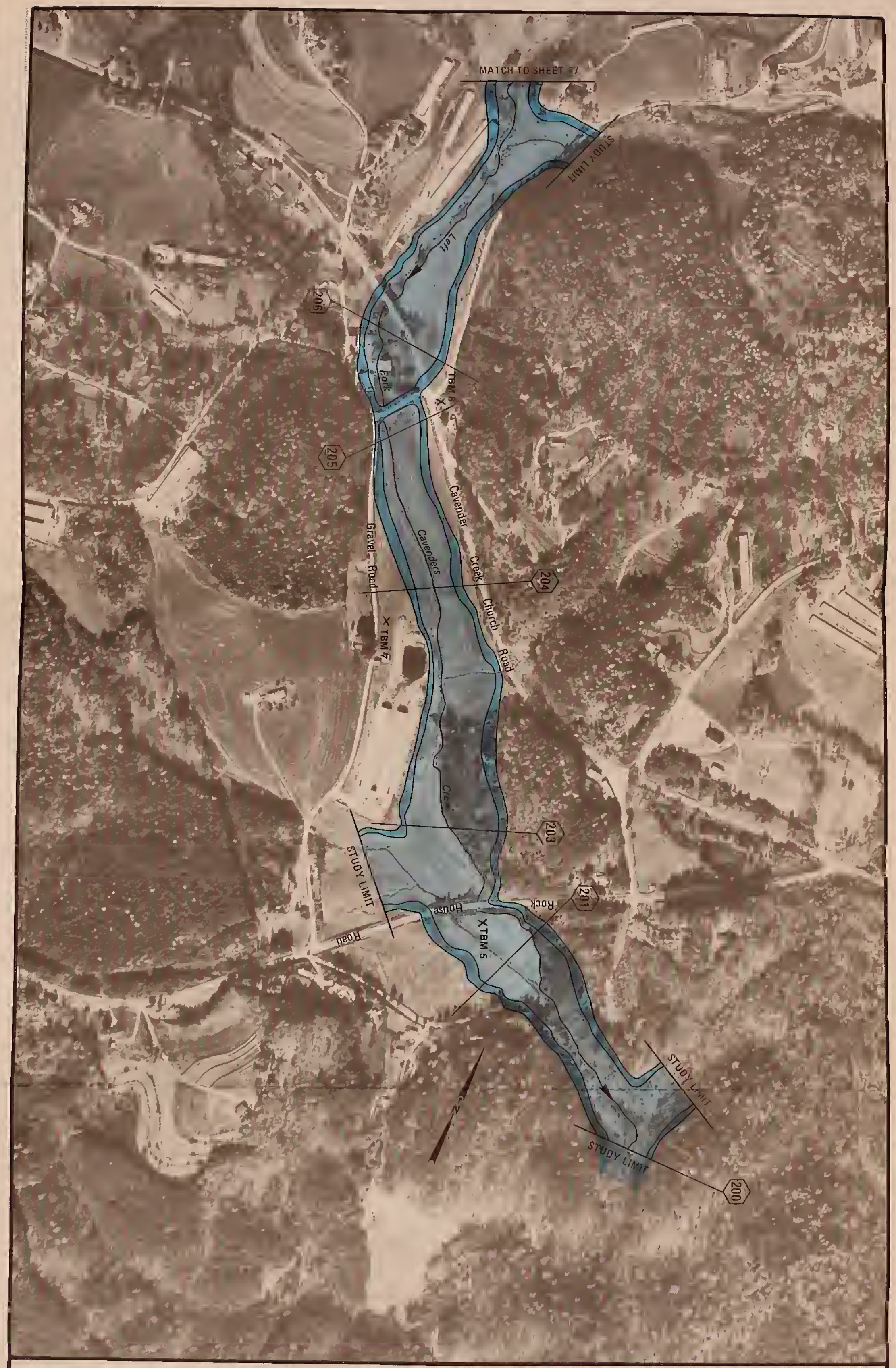
Photography by
ASCS 1-24-81

SHEET 25 OF 29

U. S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

TRIBUTARY B



LEGEND

X Elevation Reference Marks

100 Year Flood Hazard Area

500 Year Flood Hazard Area

Cross Section Location

Stream Channel

400 0 400
Scale in Feet

100 0 100
Scale in Meters

Photography by
ASCS 1-24-81

SHEET 26 OF 29

U. S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

LEFT FORK CAVENDERS CREEK

STUDY LIMIT

Left Fork Cavenders Creek

STUDY LIMIT

Creek

209

DETAILED STUDY AREA LIMIT

N

MATCH TO SHEET 2

LEGEND

X Elevation Reference Marks

100 Year Flood Hazard Area

500 Year Flood Hazard Area

Cross Section Location

Stream Channel

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 27 OF 29

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

LEFT FORK CAVENDERS CREEK

STUDY LIMIT

Pecks Mill Creek

LIMITED INTENSITY STUDY AREA

STUDY LIMIT

MATCH TO SHEET 29

LEGEND

X Elevation Reference Marks

Cross Section Location

100 Year Flood Hazard Area

Stream Channel

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 28 OF 29

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

PECKS MILL CREEK

LEGEND

X Elevation Reference Marks

100 Year Flood Hazard Area

Cross Section Location

Stream Channel

Photography by
ASCS 1-24-81

400 0 400
Scale in Feet

100 0 100
Scale in Meters

SHEET 29 OF 29

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
DAHLONEGA AND LUMPKIN
COUNTY, GEORGIA

FLOOD HAZARD AREA

PECKS MILL CREEK

APPENDIX A

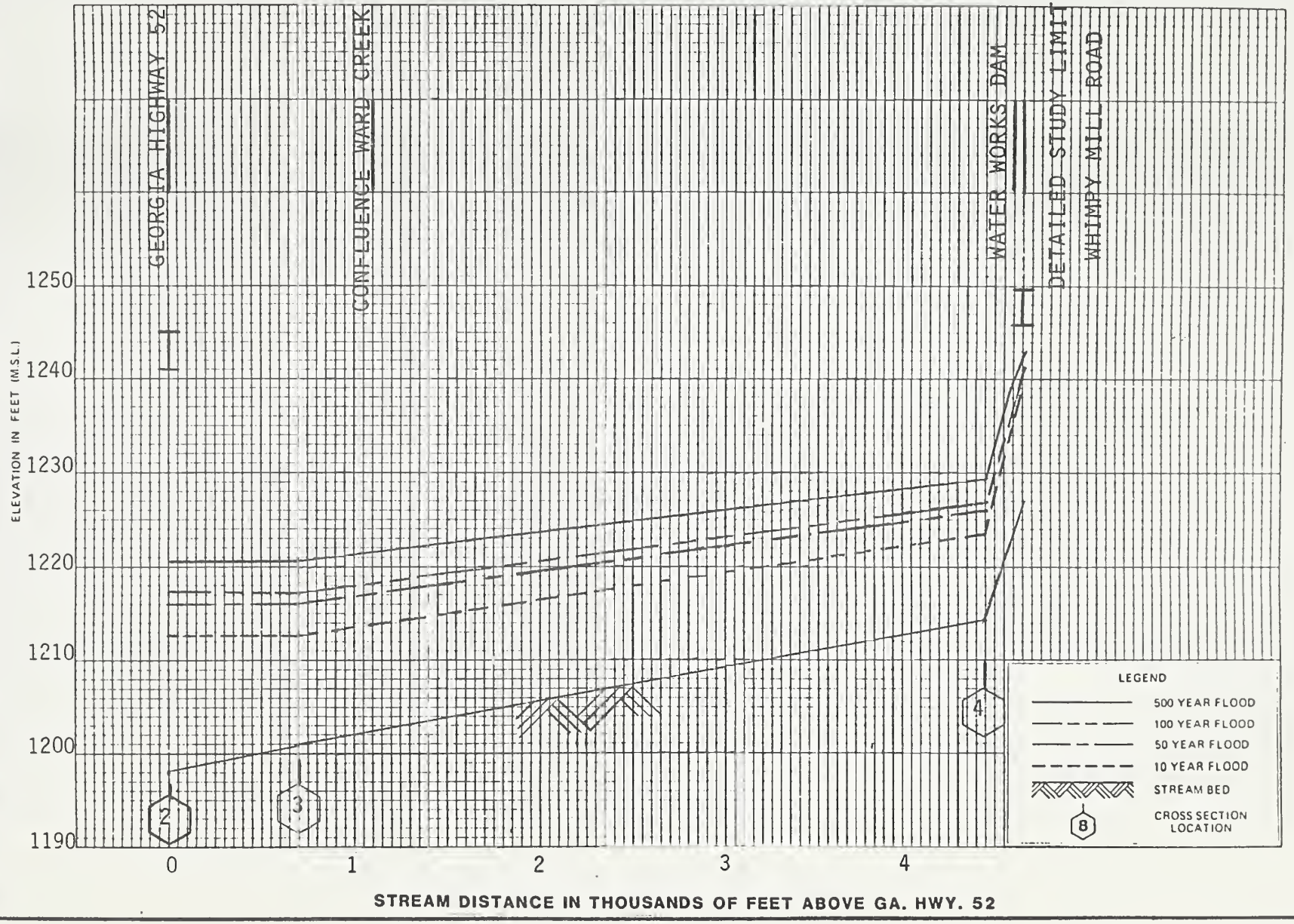
1

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



2	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FLOOD PLAIN MANAGEMENT STUDY LUMPKIN COUNTY, GEORGIA	FLOOD PROFILES YAHOOLA CREEK

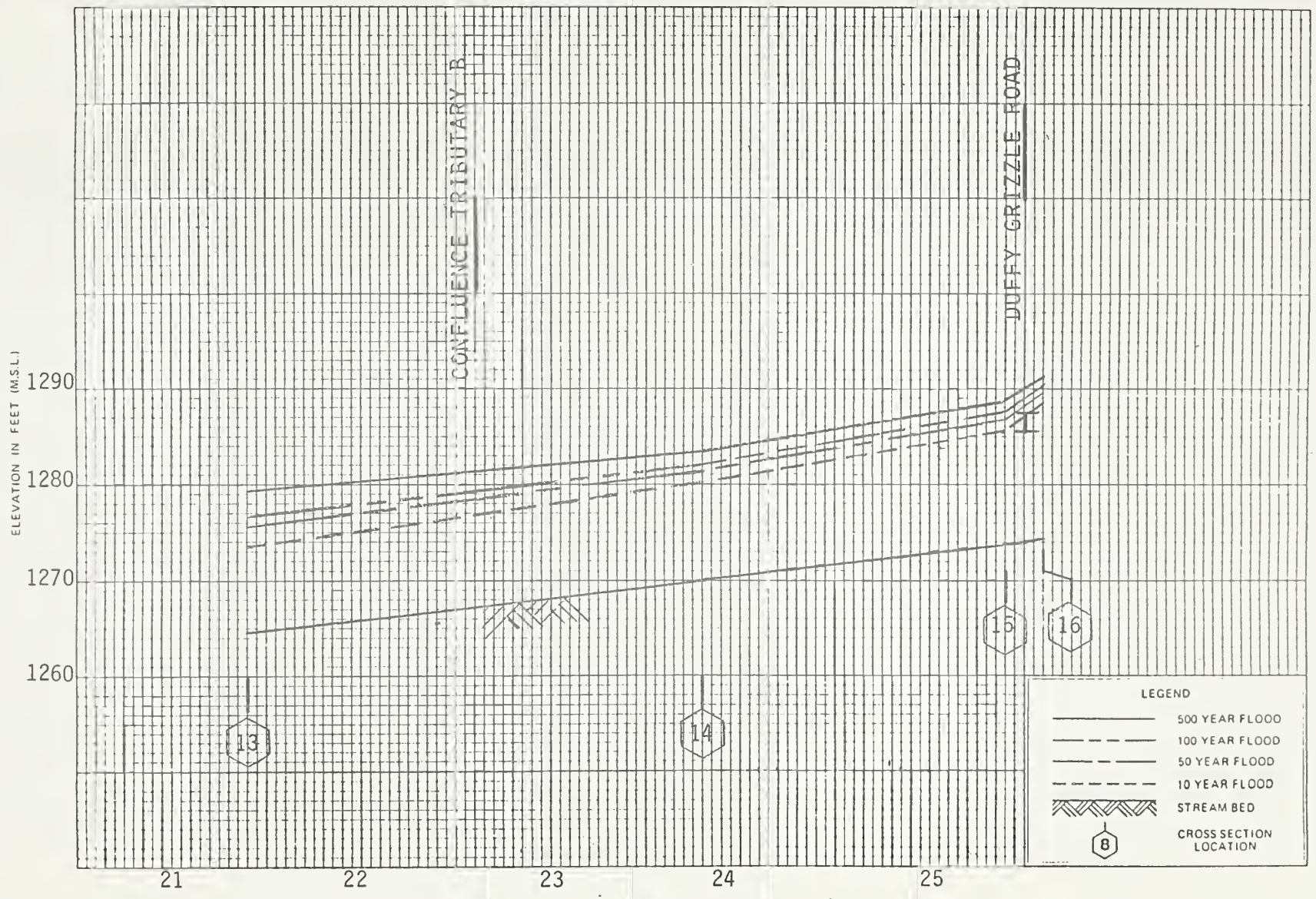
3

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



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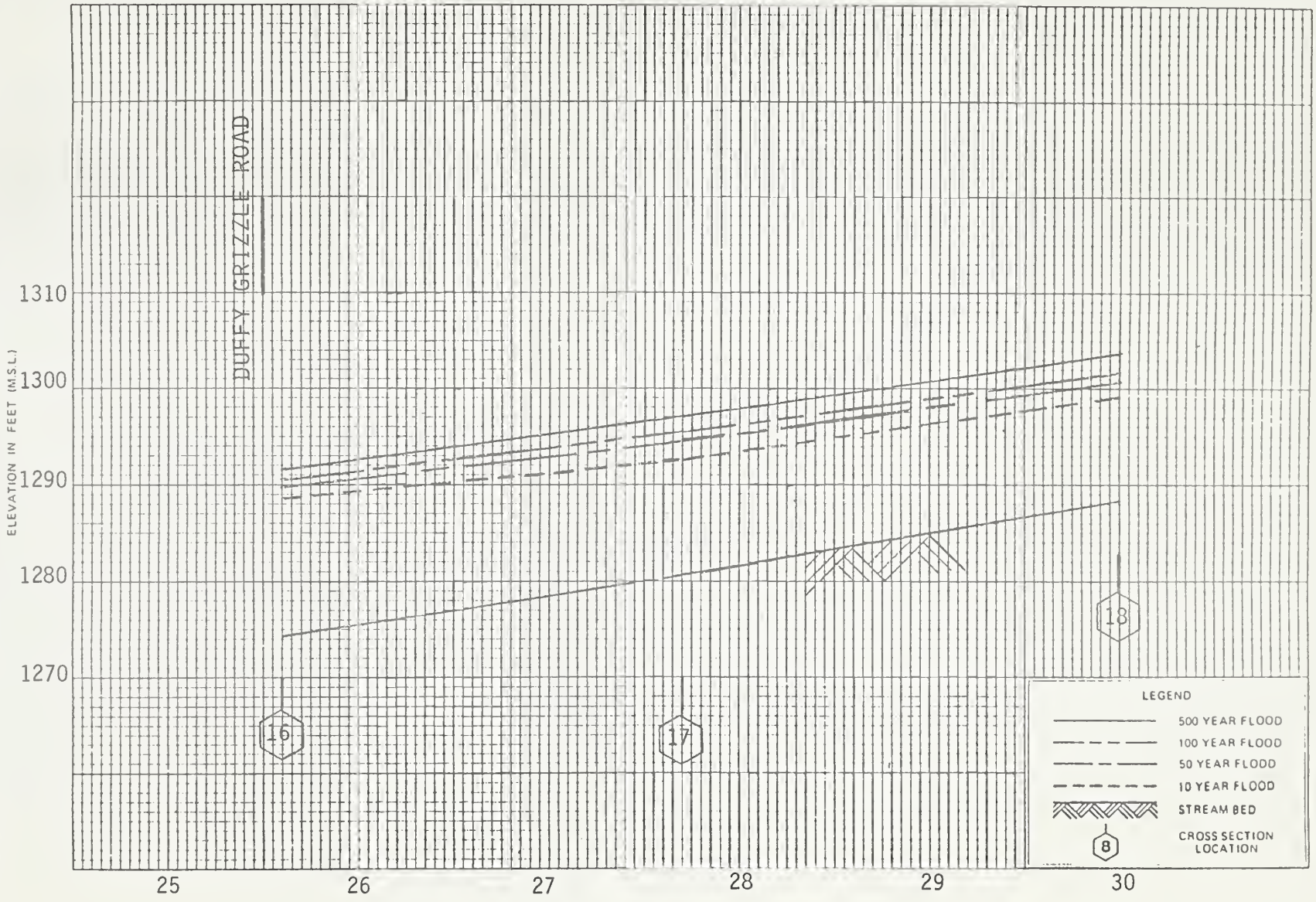
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



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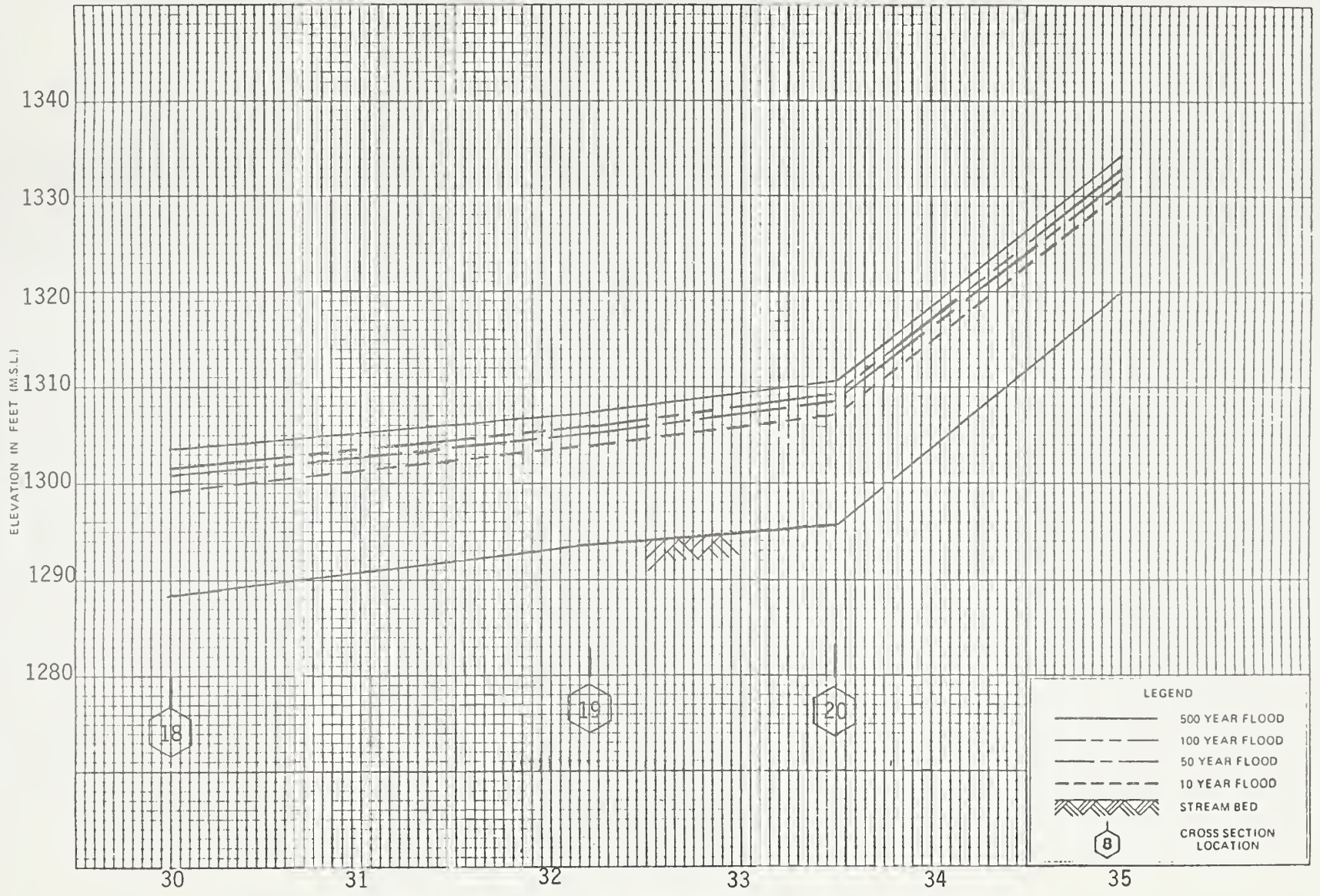
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



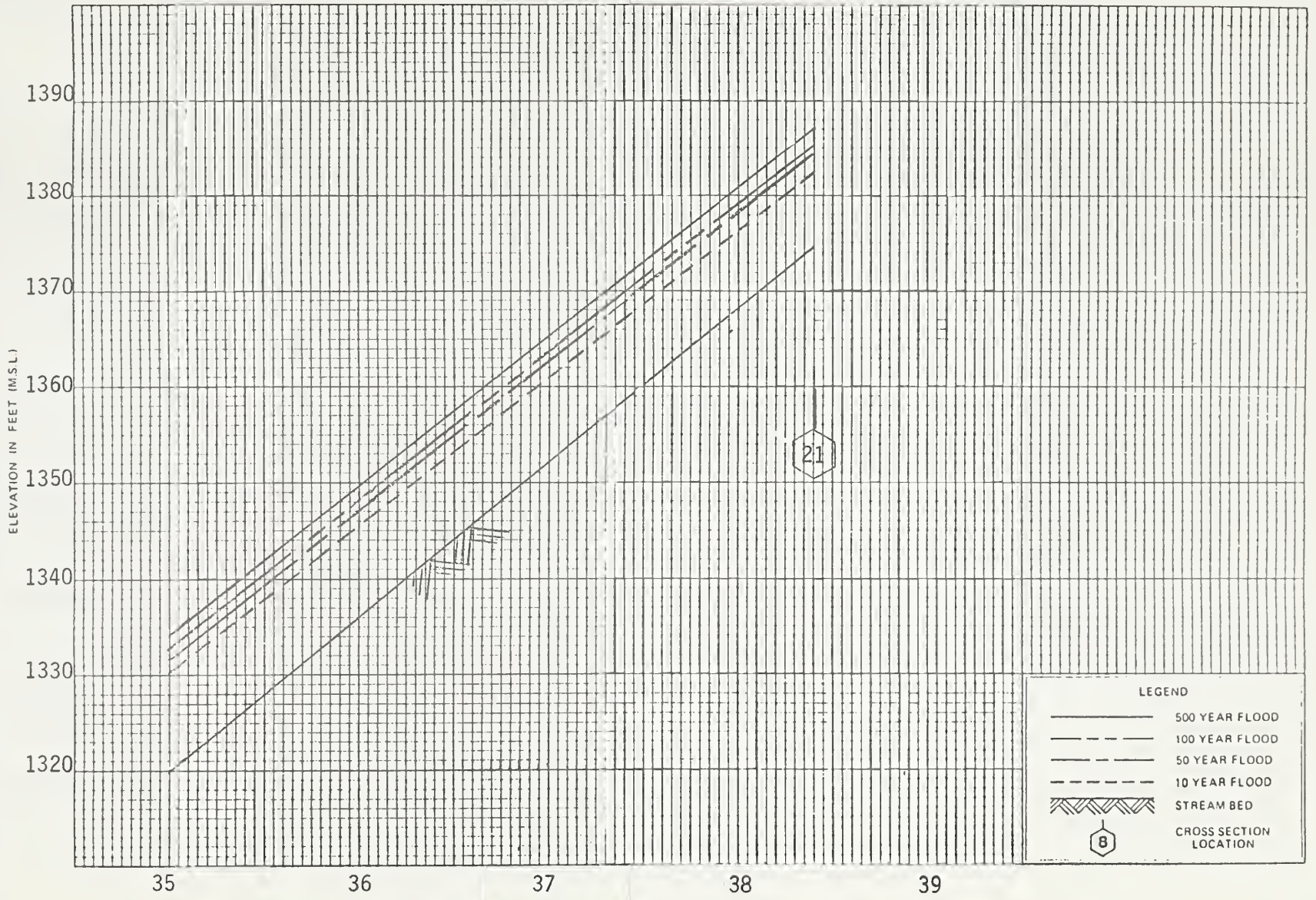
6

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



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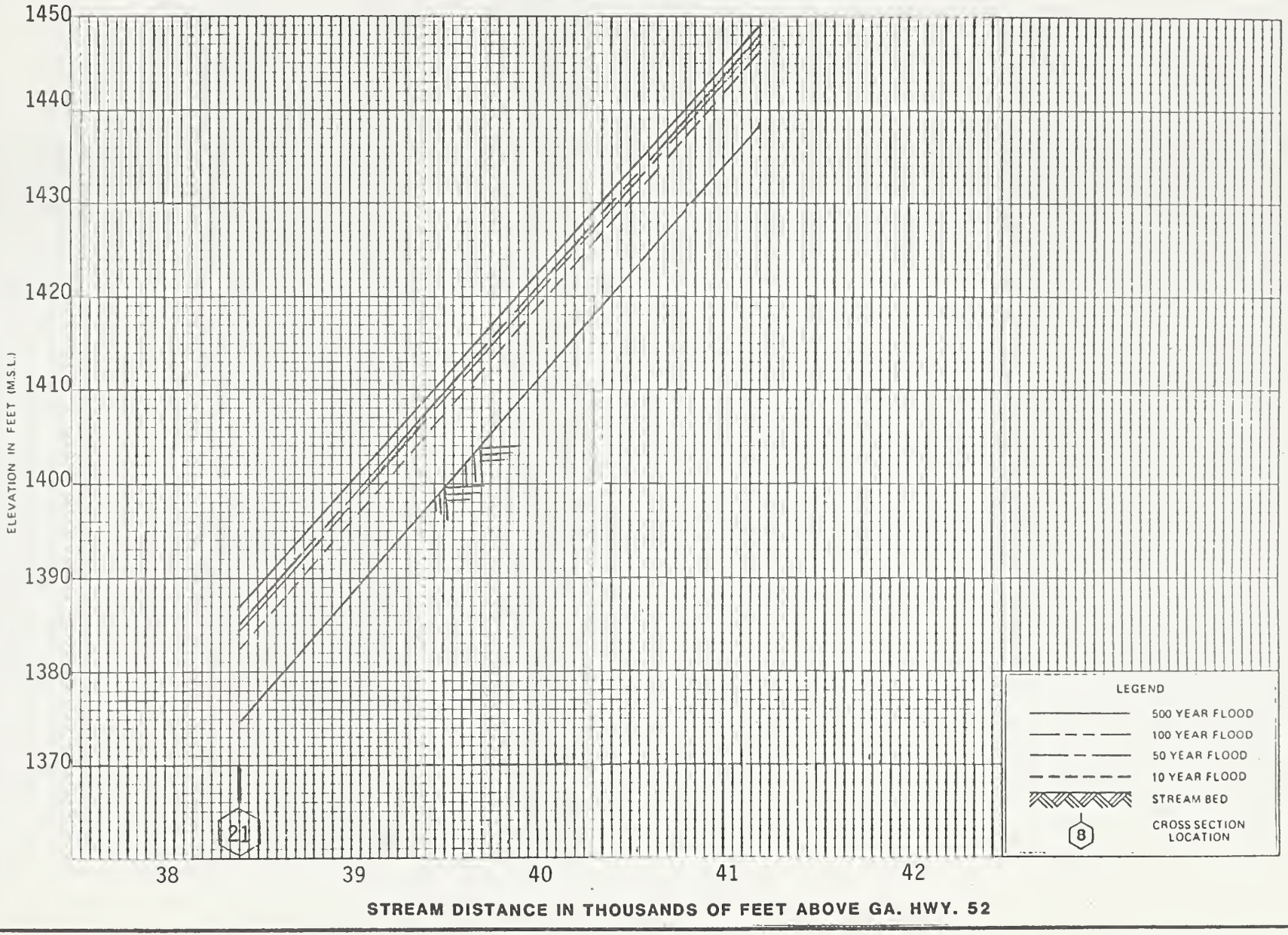
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



8

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES

9

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES

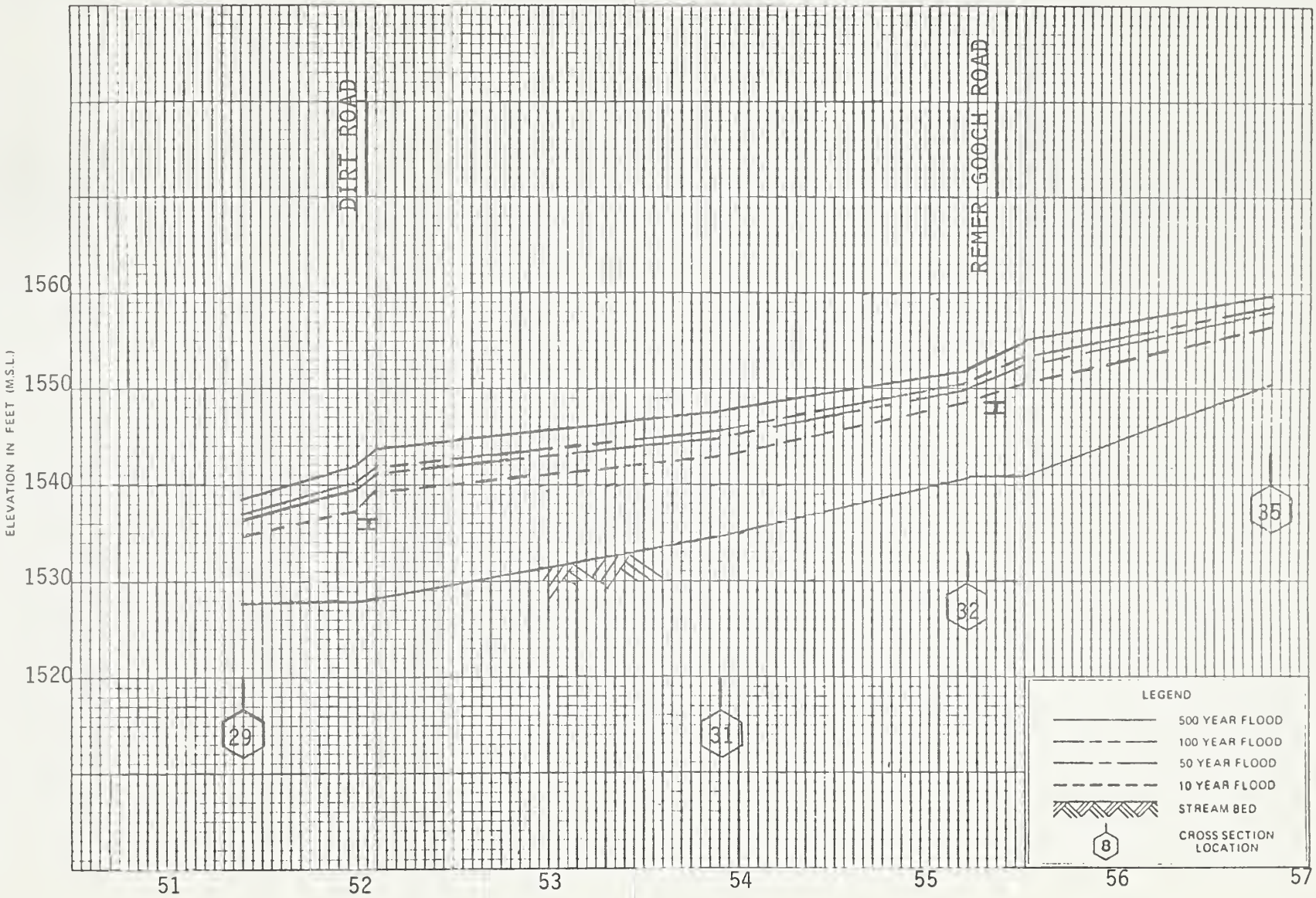
10

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

YAHOOLA CREEK

FLOOD PROFILES



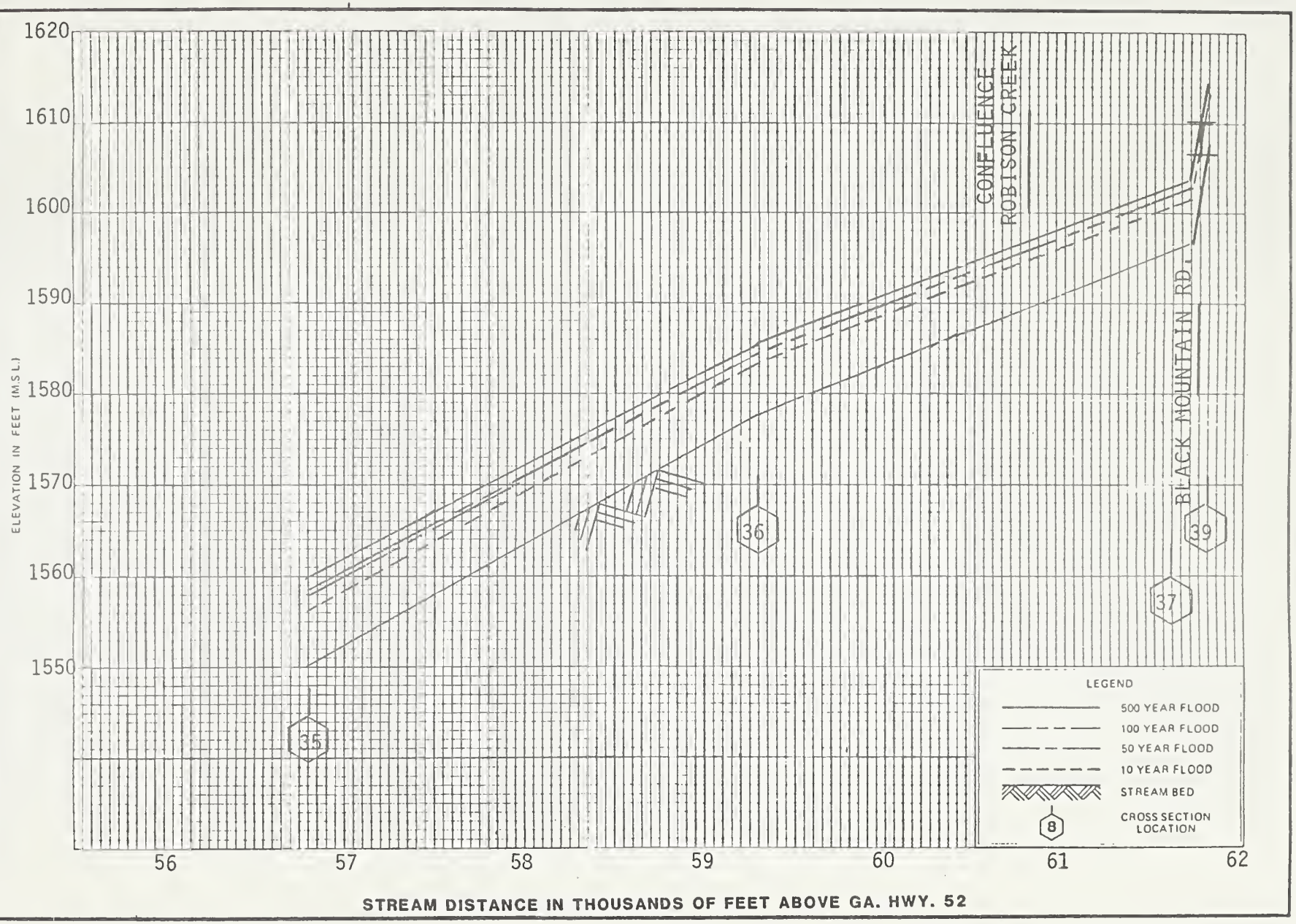
11

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



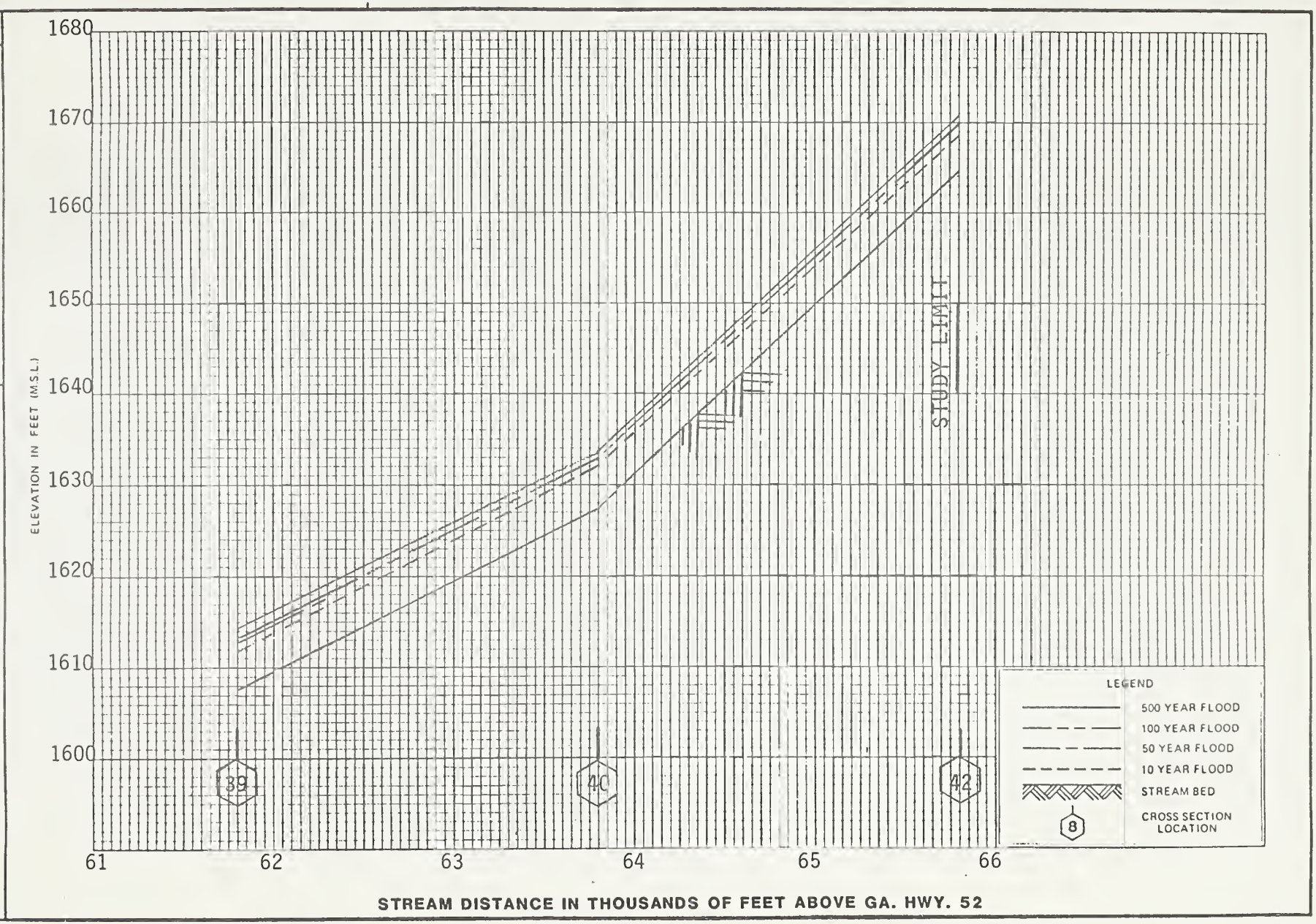
12

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

YAHOOLA CREEK

FLOOD PROFILES



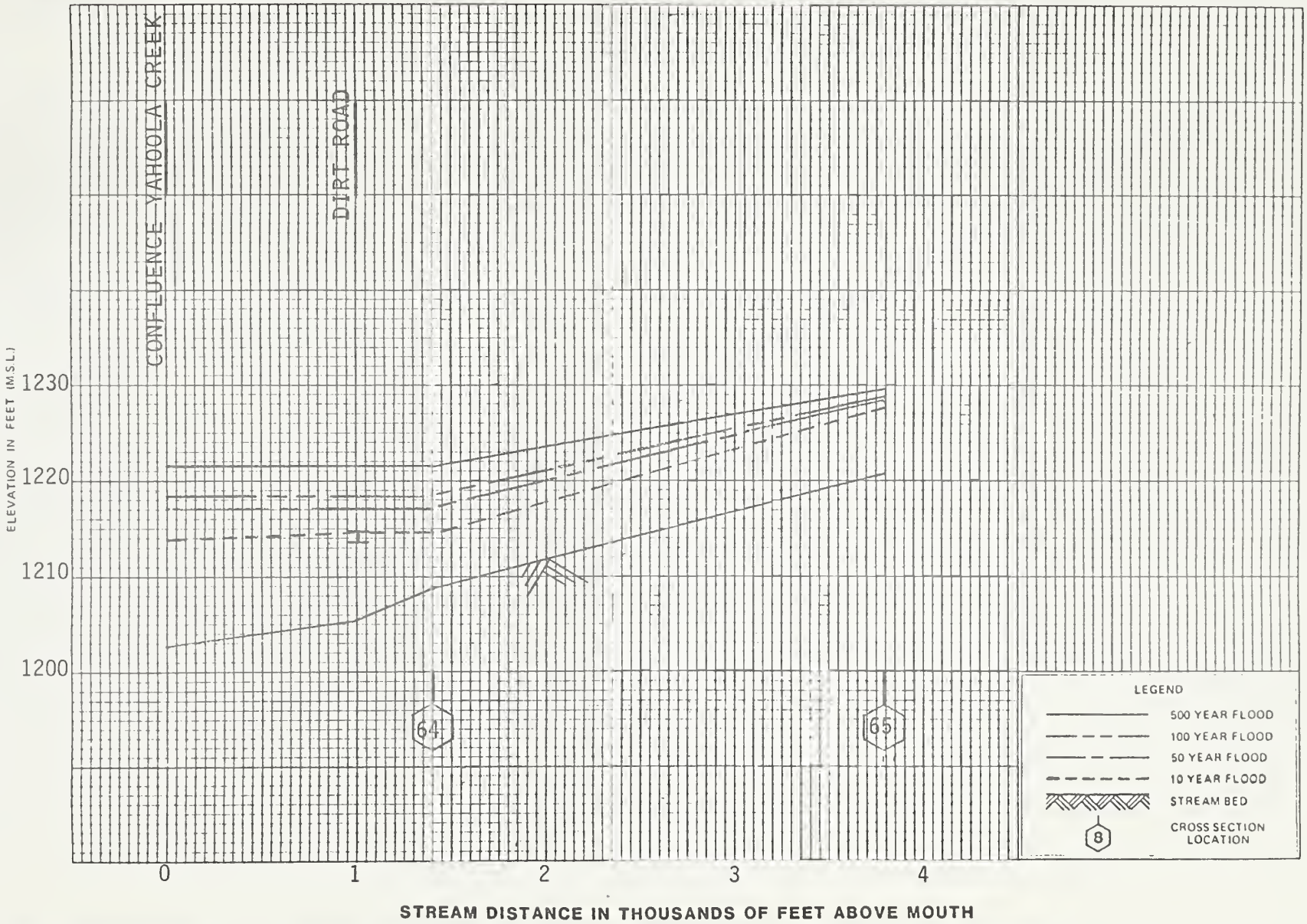
13

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

WARD CREEK

FLOOD PROFILES



14

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WARD CREEK

FLOOD PROFILES

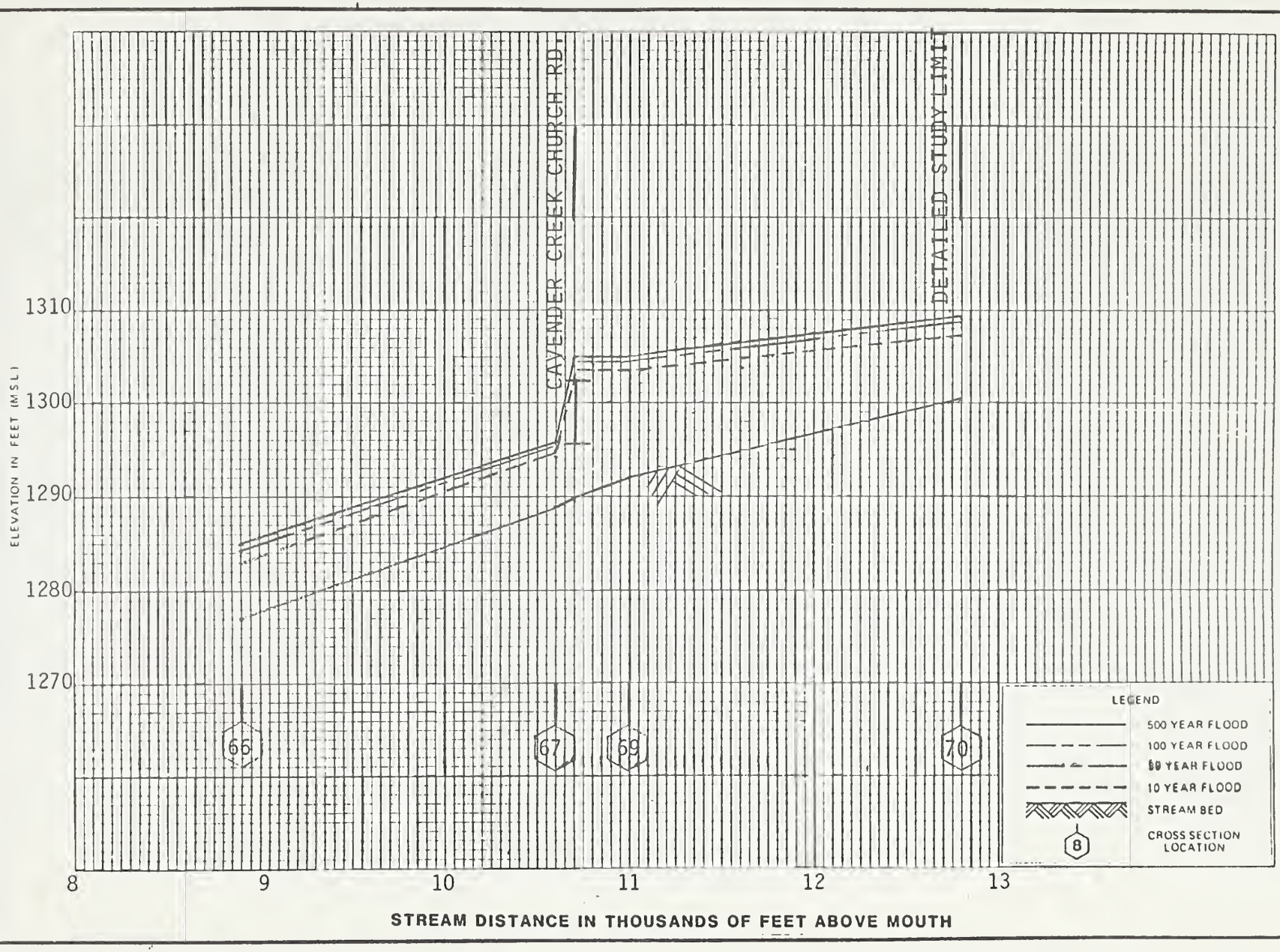
15

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

WARD CREEK

FLOOD PROFILES



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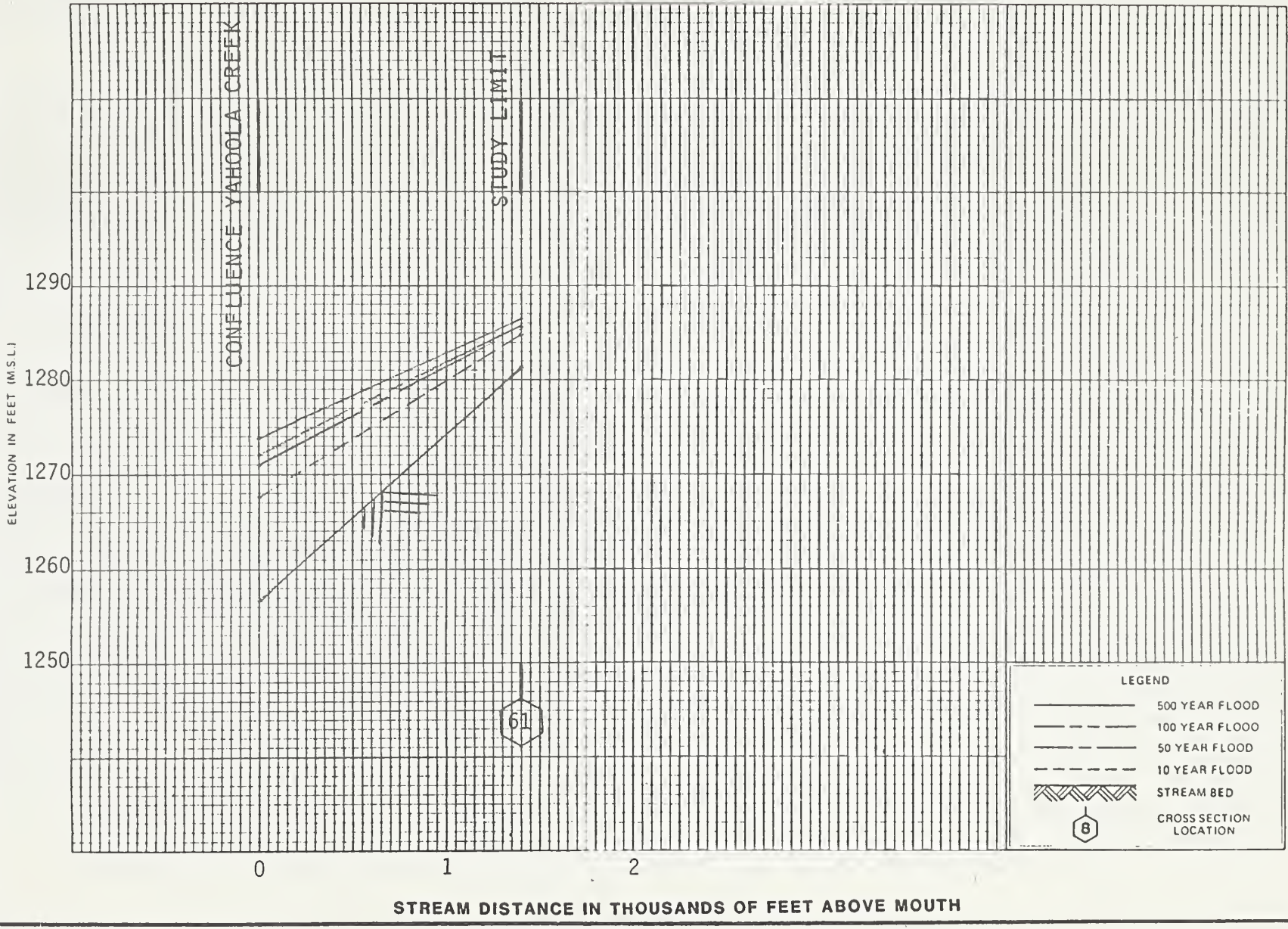
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

FLOOD PROFILES

TRIBUTARY A



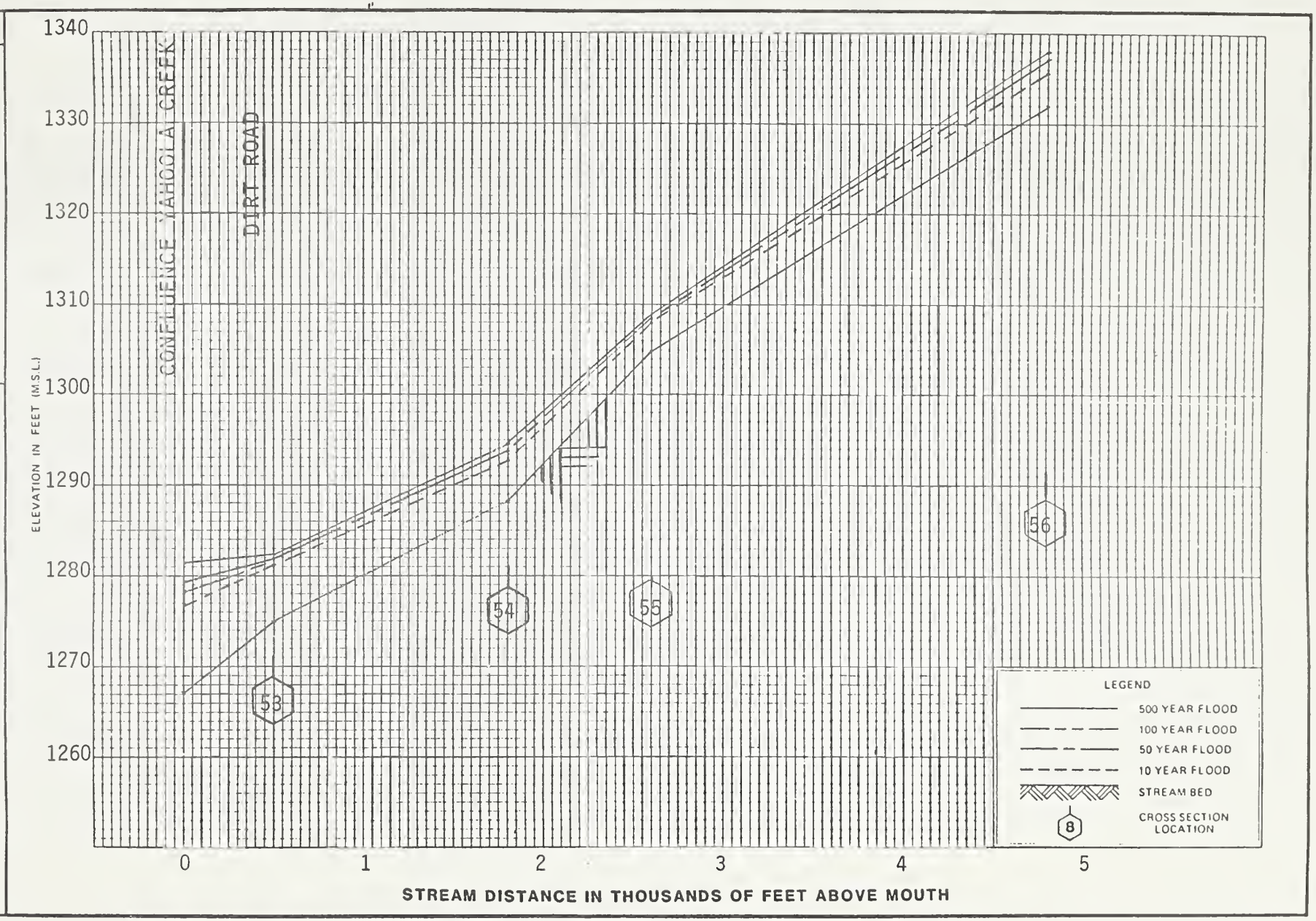
17

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

FLOOD PROFILES

TRIBUTARY B



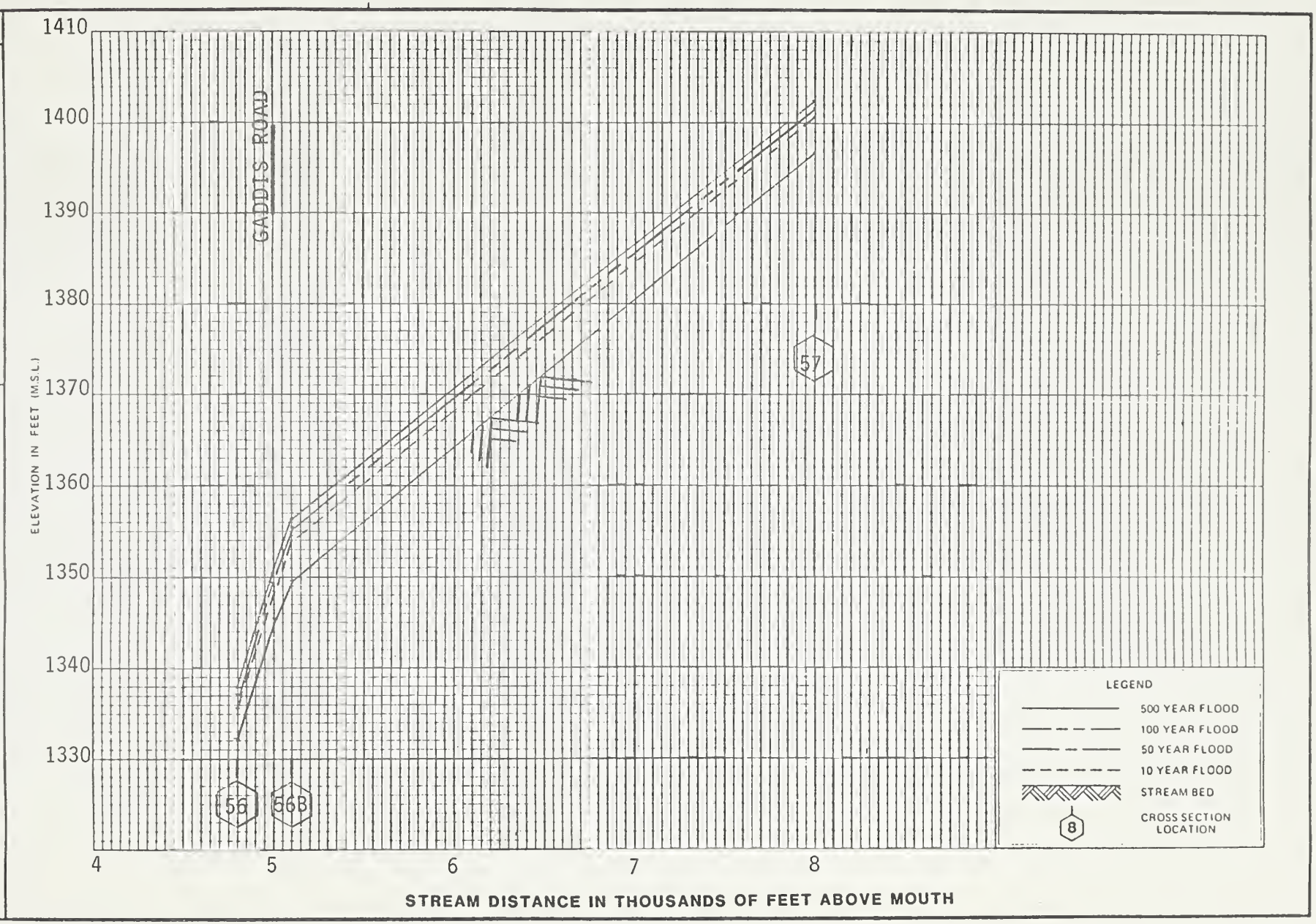
18

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TRIBUTARY B

FLOOD PROFILES



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SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

FLOOD PROFILES

TRIBUTARY B

20

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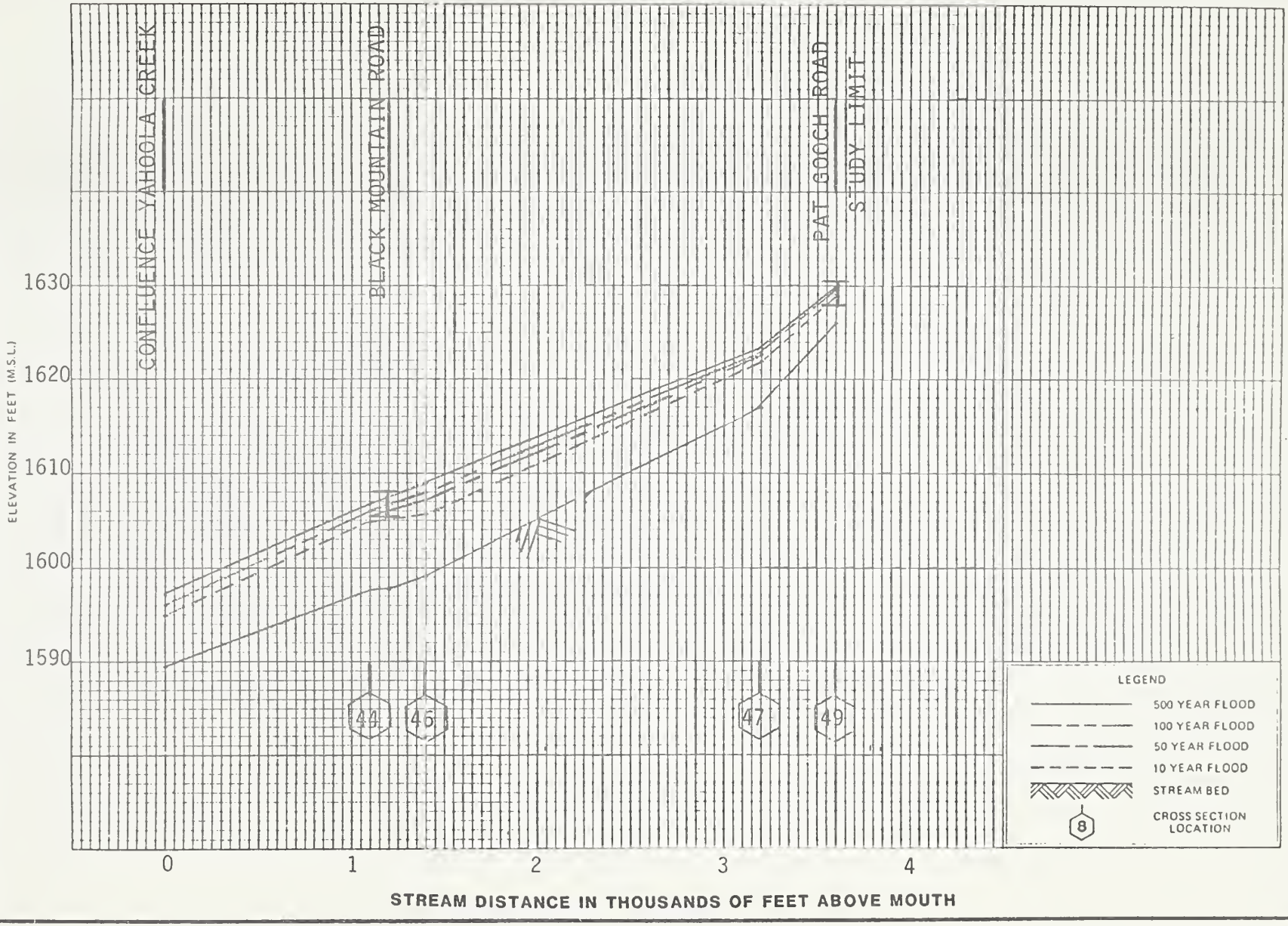
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

ROBISON CREEK

FLOOD PROFILES



21	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FLOOD PLAIN MANAGEMENT STUDY LUMPKIN COUNTY, GEORGIA	FLOOD PROFILES CANE CREEK

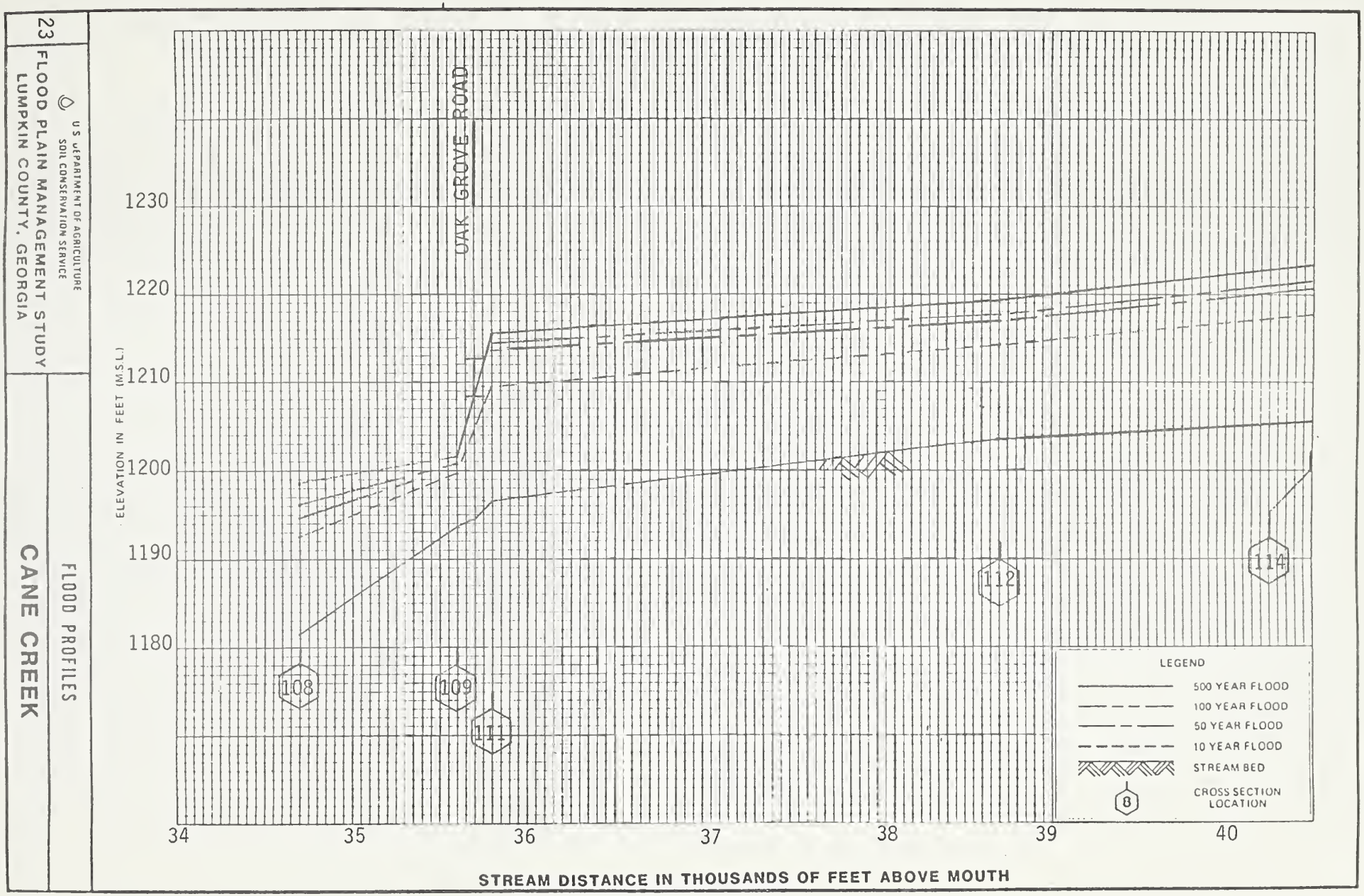
22

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CANE CREEK

FLOOD PROFILES


23
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA
CANE CREEK
FLOOD PROFILES
OAK GROVE ROAD
ELEVATION IN FEET (M.S.L.)
1230
1220
1210
1200
1190
1180
34
35
36
37
38
39
40
108
109
111
112
114
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
8
CROSS SECTION LOCATION
STREAM DISTANCE IN THOUSANDS OF FEET ABOVE MOUTH

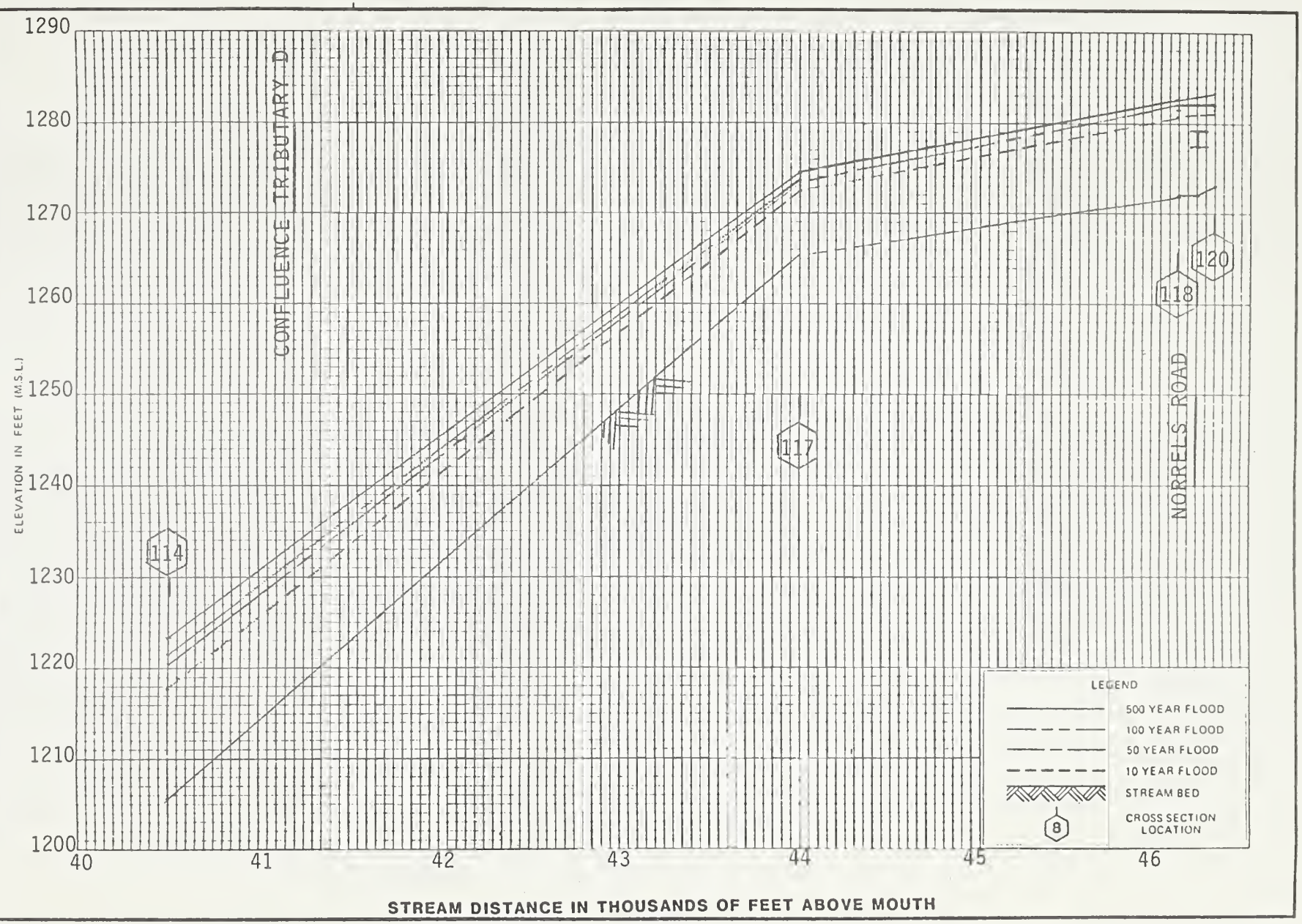
24

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CANE CREEK

FLOOD PROFILES



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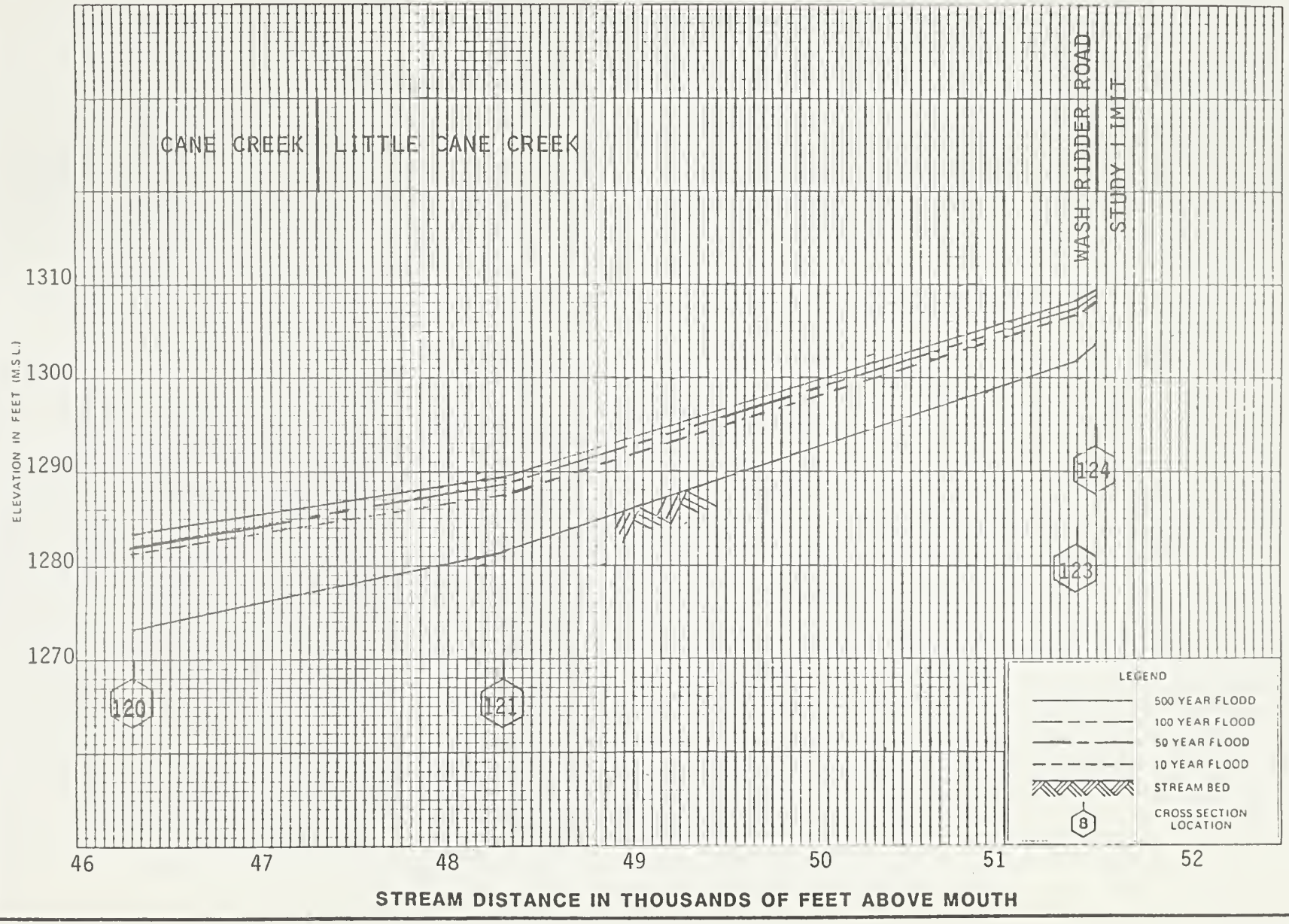
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CANE AND LITTLE CANE CREEKS

FLOOD PROFILES



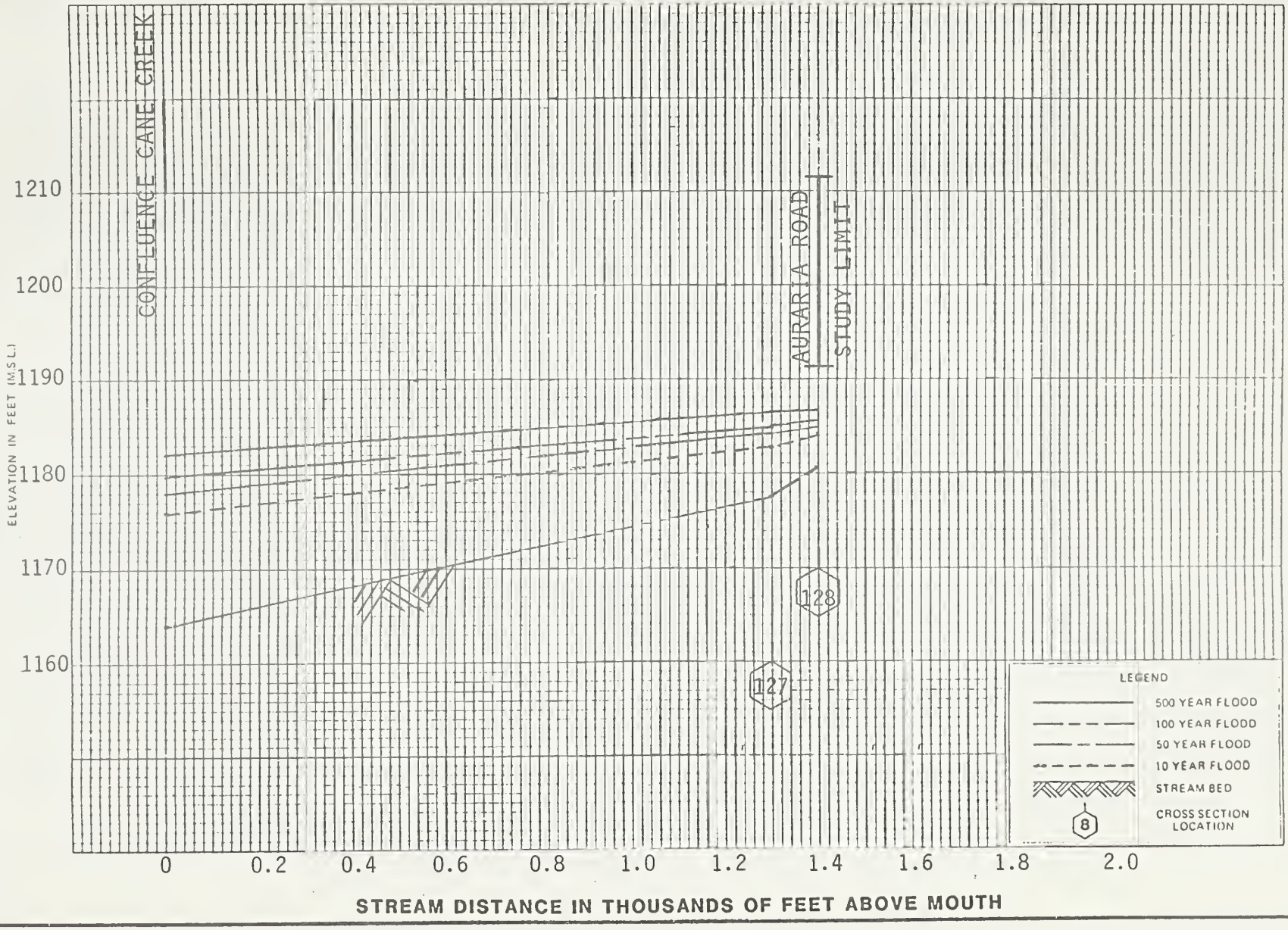
26

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CROOKED CREEK

FLOOD PROFILES



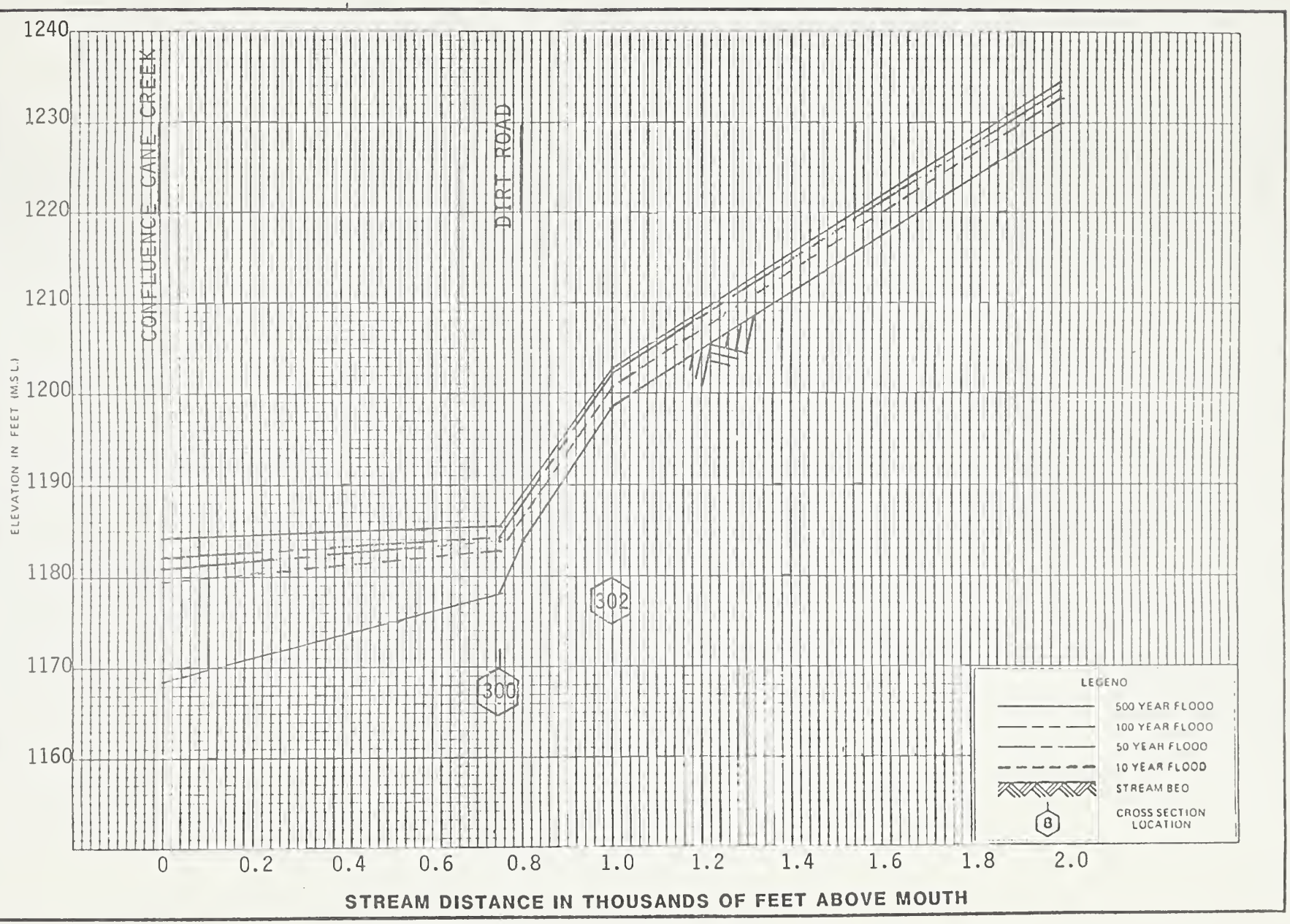
27

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TRIBUTARY C

FLOOD PROFILES



28

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

TRIBUTARY C

FLOOD PROFILES

29	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FLOOD PLAIN MANAGEMENT STUDY LUMPKIN COUNTY, GEORGIA	FLOOD PROFILES **TRIBUTARY C**

30	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FLOOD PLAIN MANAGEMENT STUDY LUMPKIN COUNTY, GEORGIA	FLOOD PROFILES **HAPPY HOLLOW CREEK**

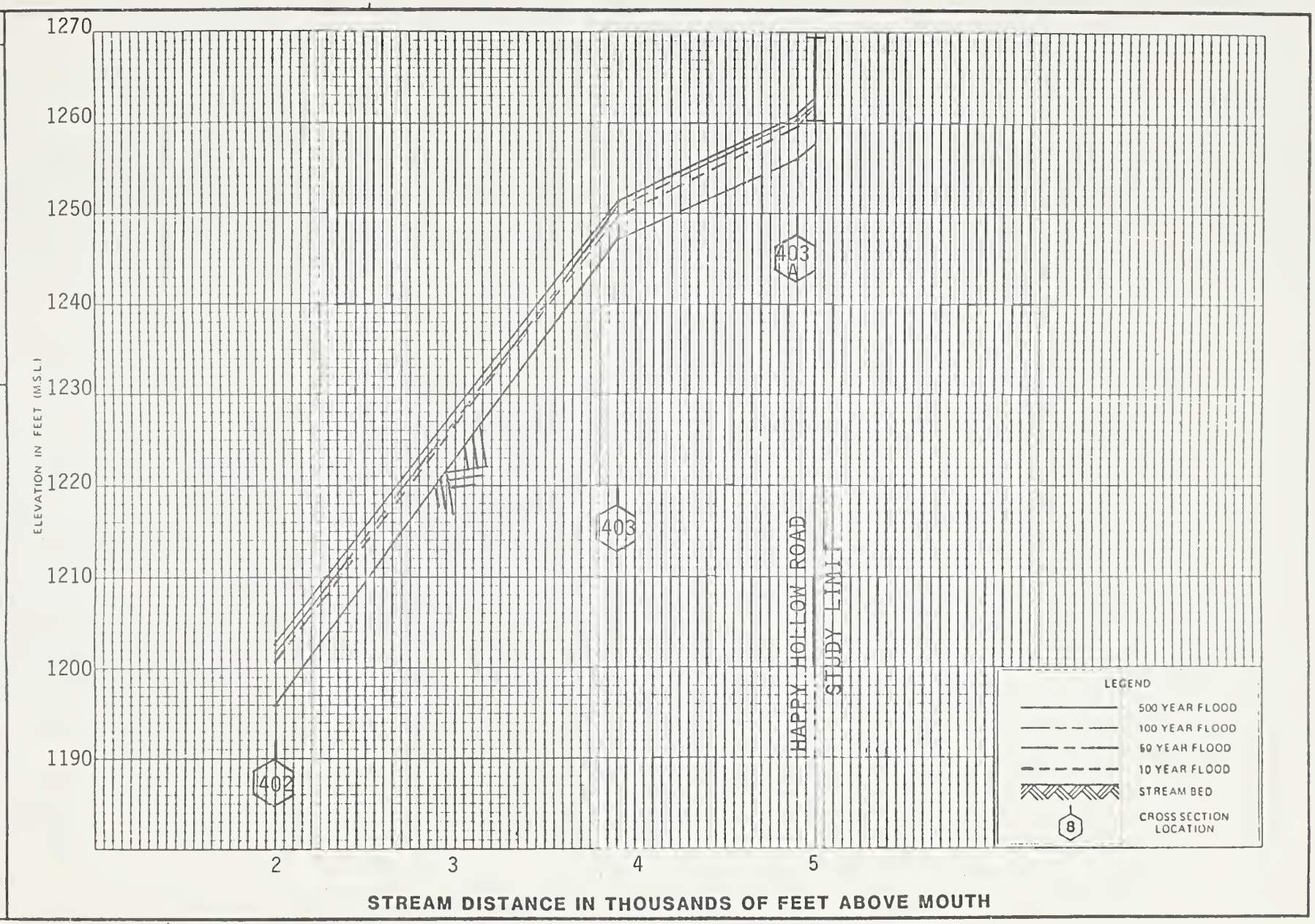
31

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

HAPPY HOLLOW CREEK

FLOOD PROFILES



32	U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FLOOD PLAIN MANAGEMENT STUDY LUMPKIN COUNTY, GEORGIA	FLOOD PROFILES **CLAY CREEK**

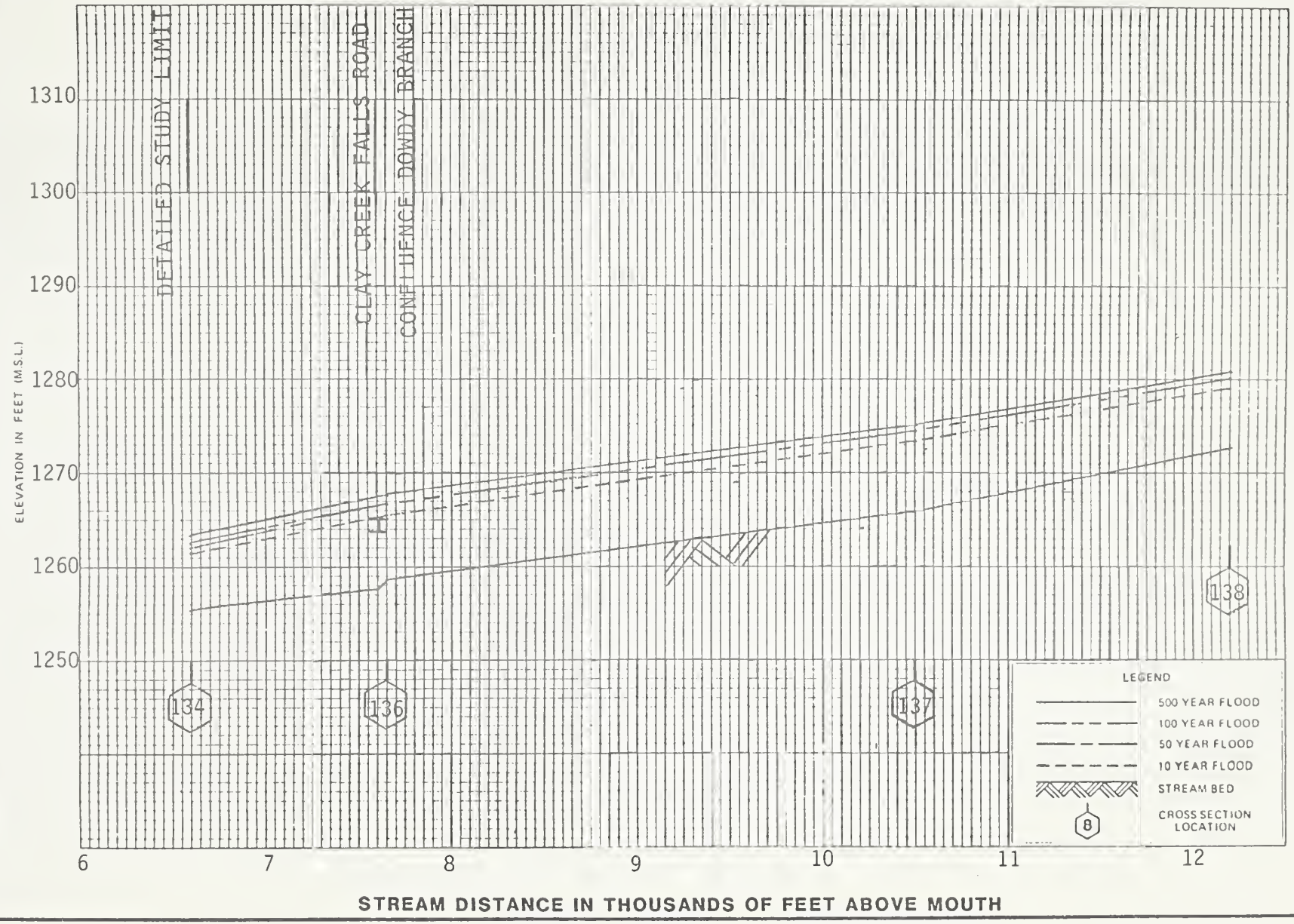
33

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CLAY CREEK

FLOOD PROFILES



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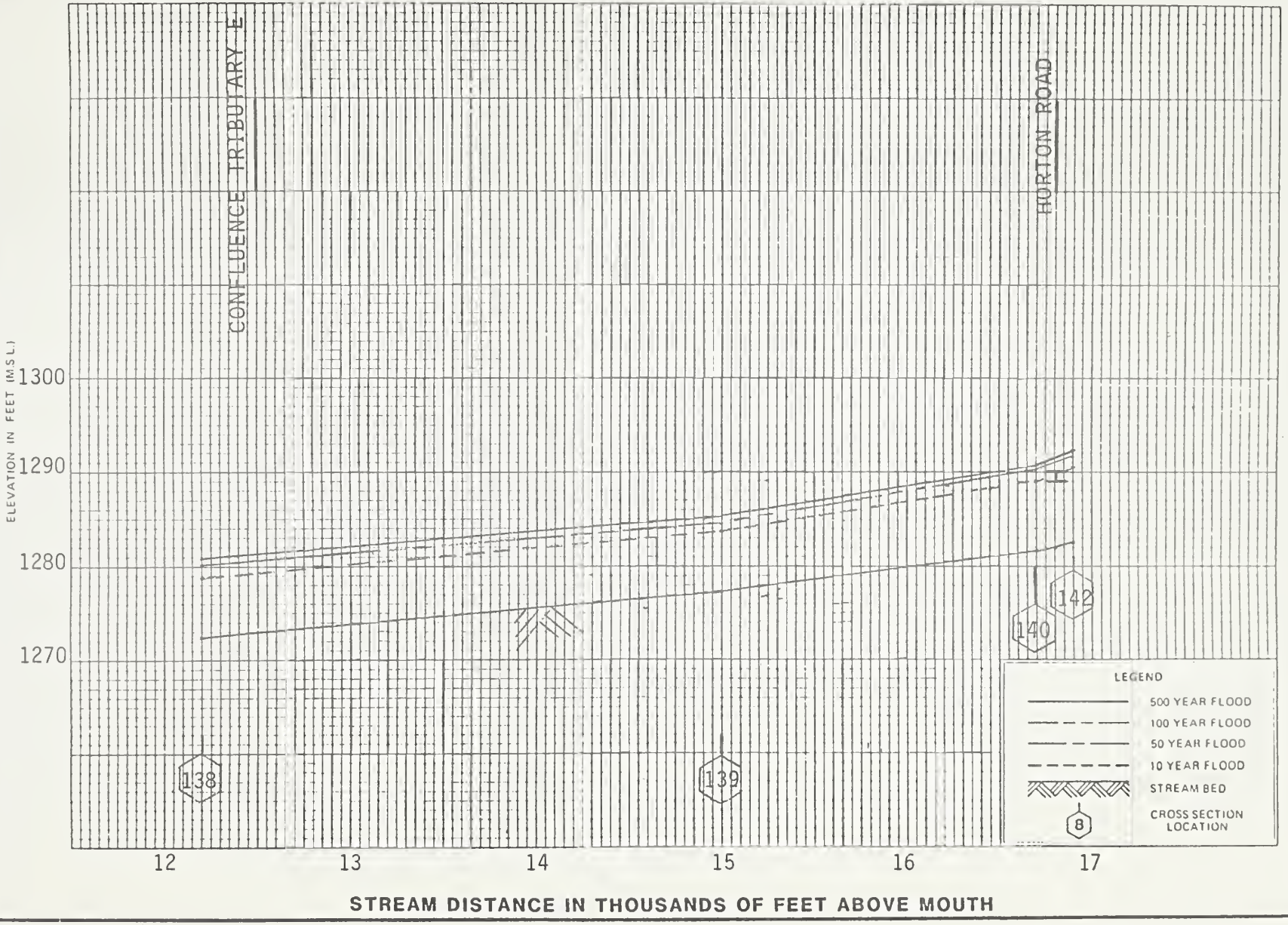
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CLAY CREEK

FLOOD PROFILES



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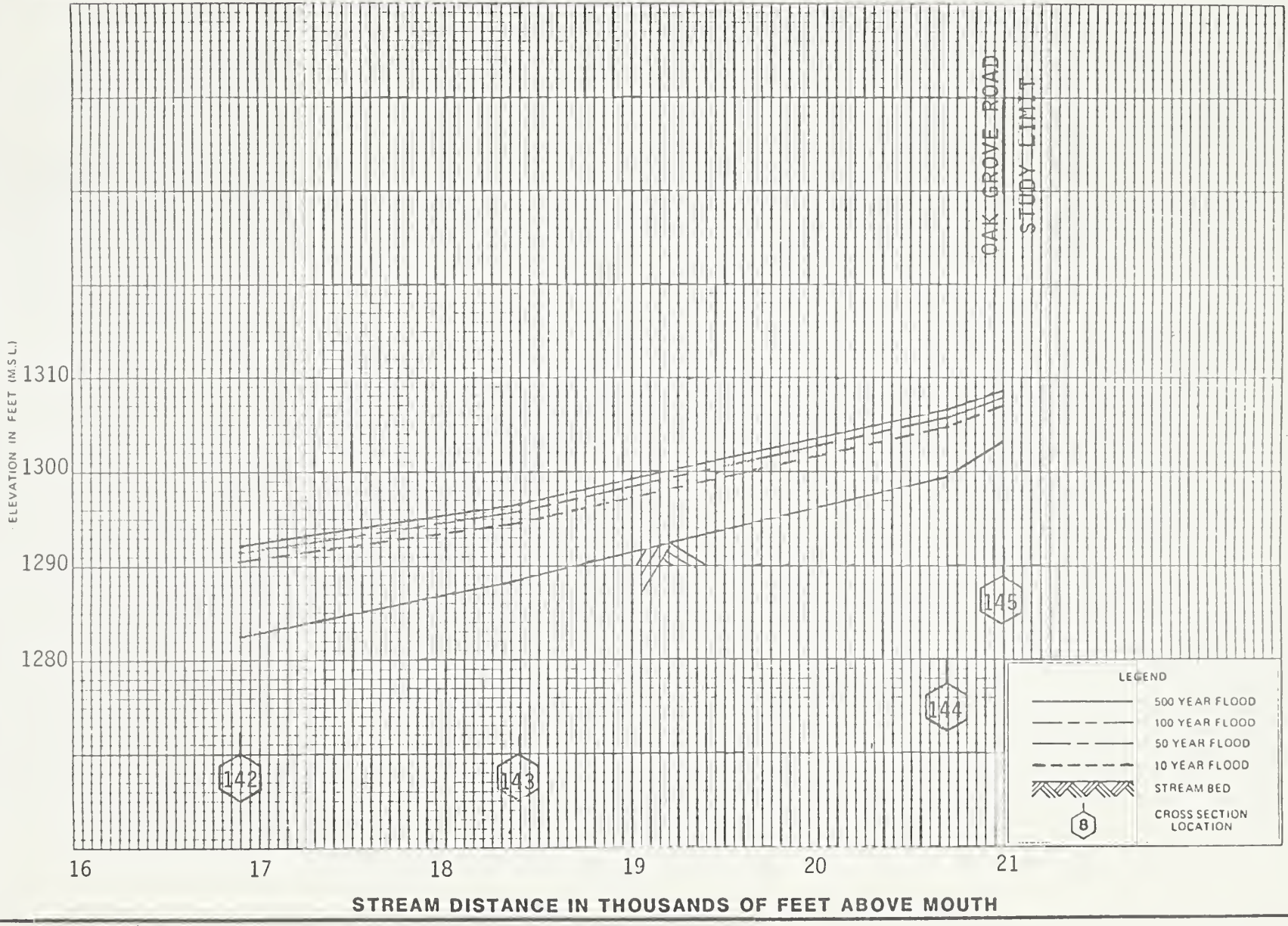
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

CLAY CREEK

FLOOD PROFILES



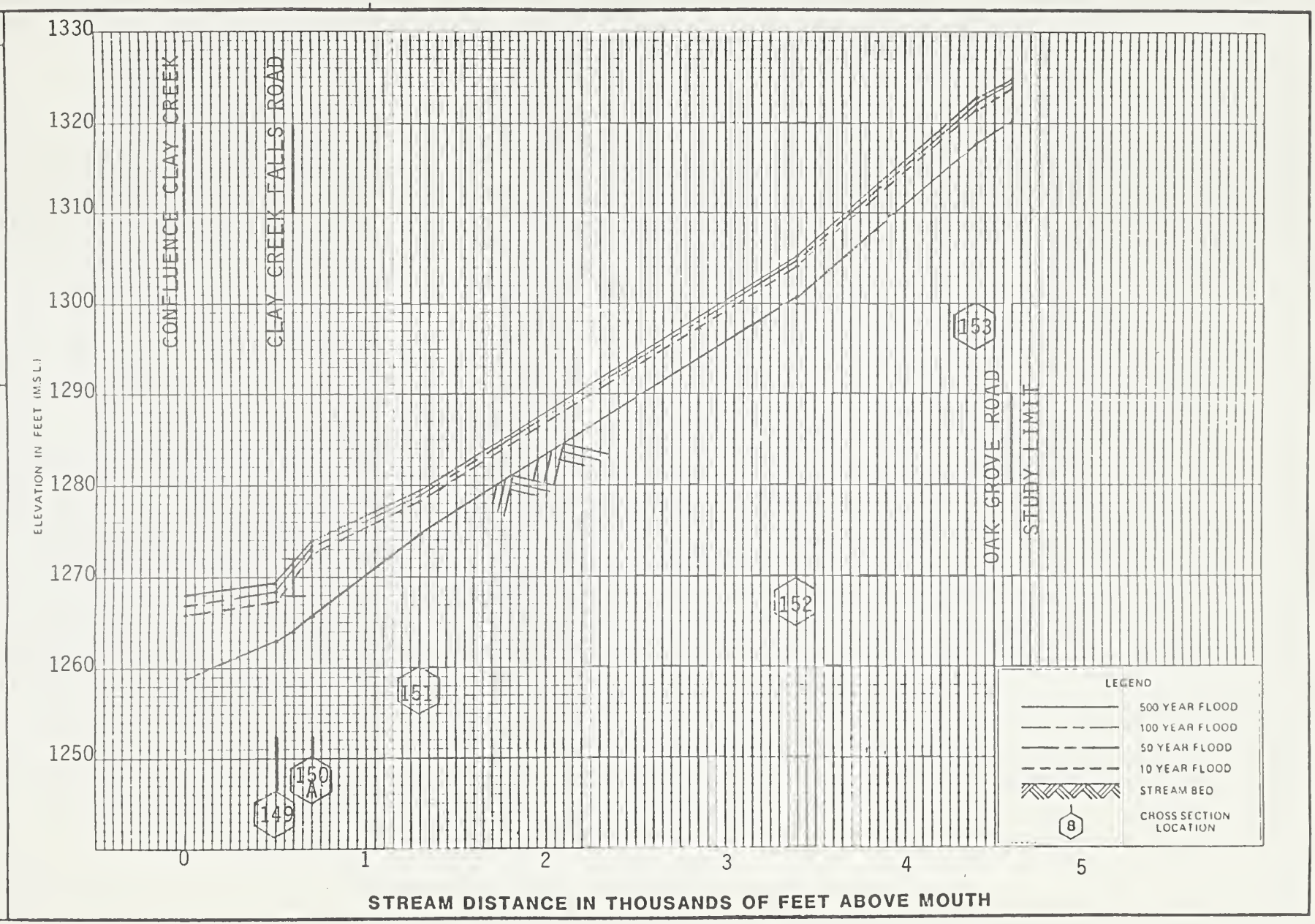
36

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

DOWDY BRANCH

FLOOD PROFILES



37	U S DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FLOOD PLAIN MANAGEMENT STUDY LUMPKIN COUNTY, GEORGIA	FLOOD PROFILES **TRIBUTARY E**

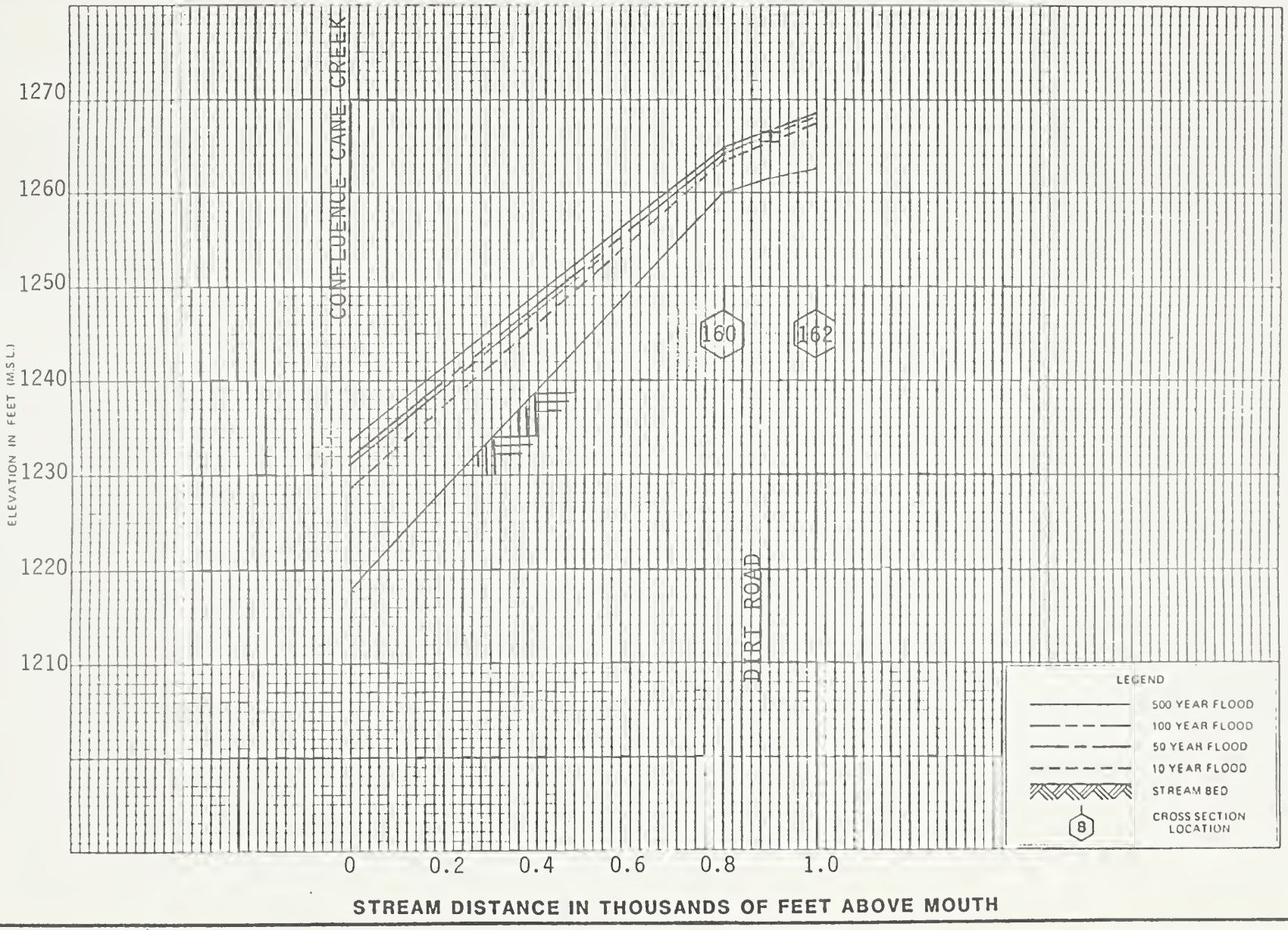
38

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TRIBUTARY D

FLOOD PROFILES



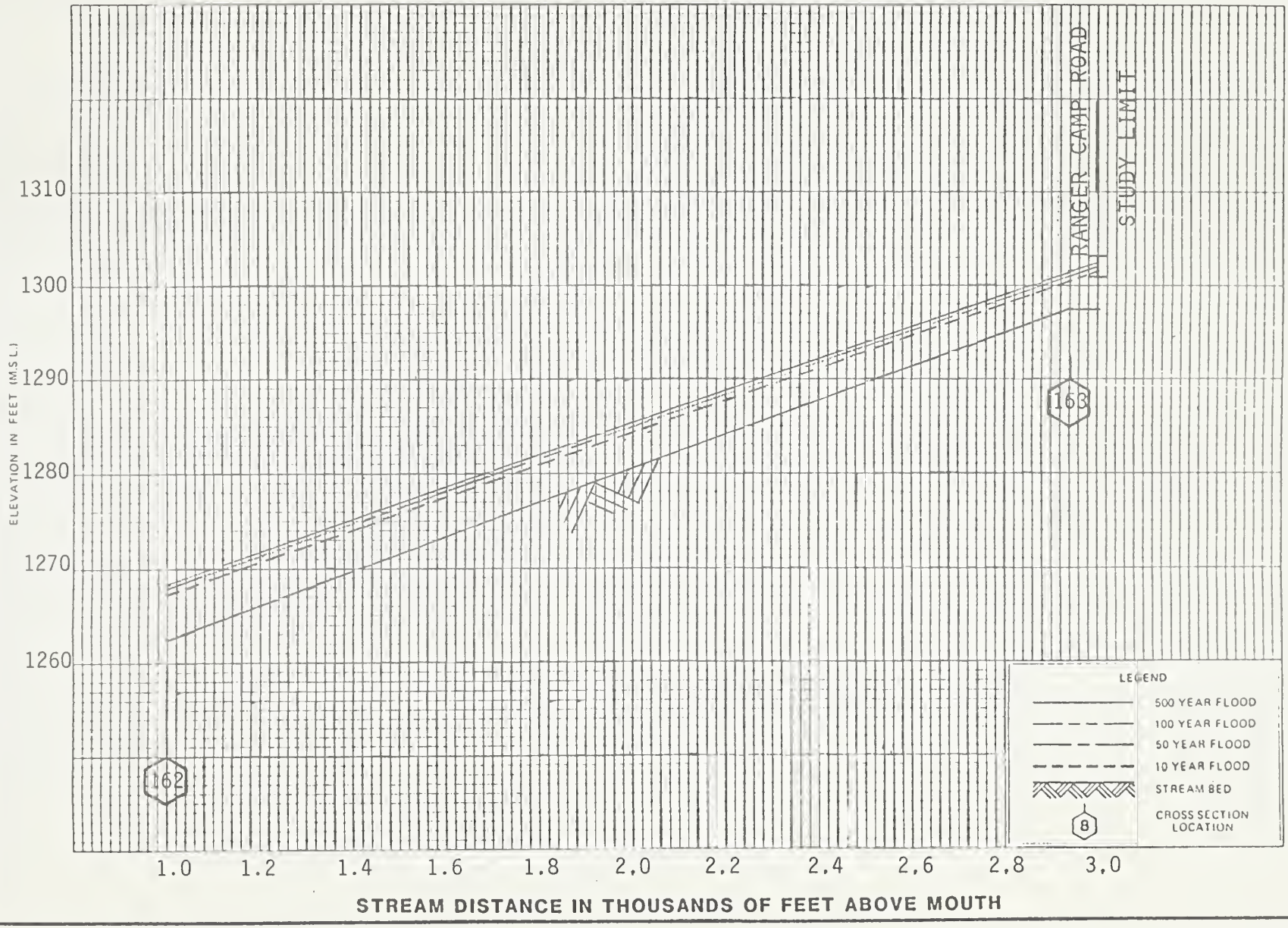
39

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

FLOOD PROFILES

TRIBUTARY D



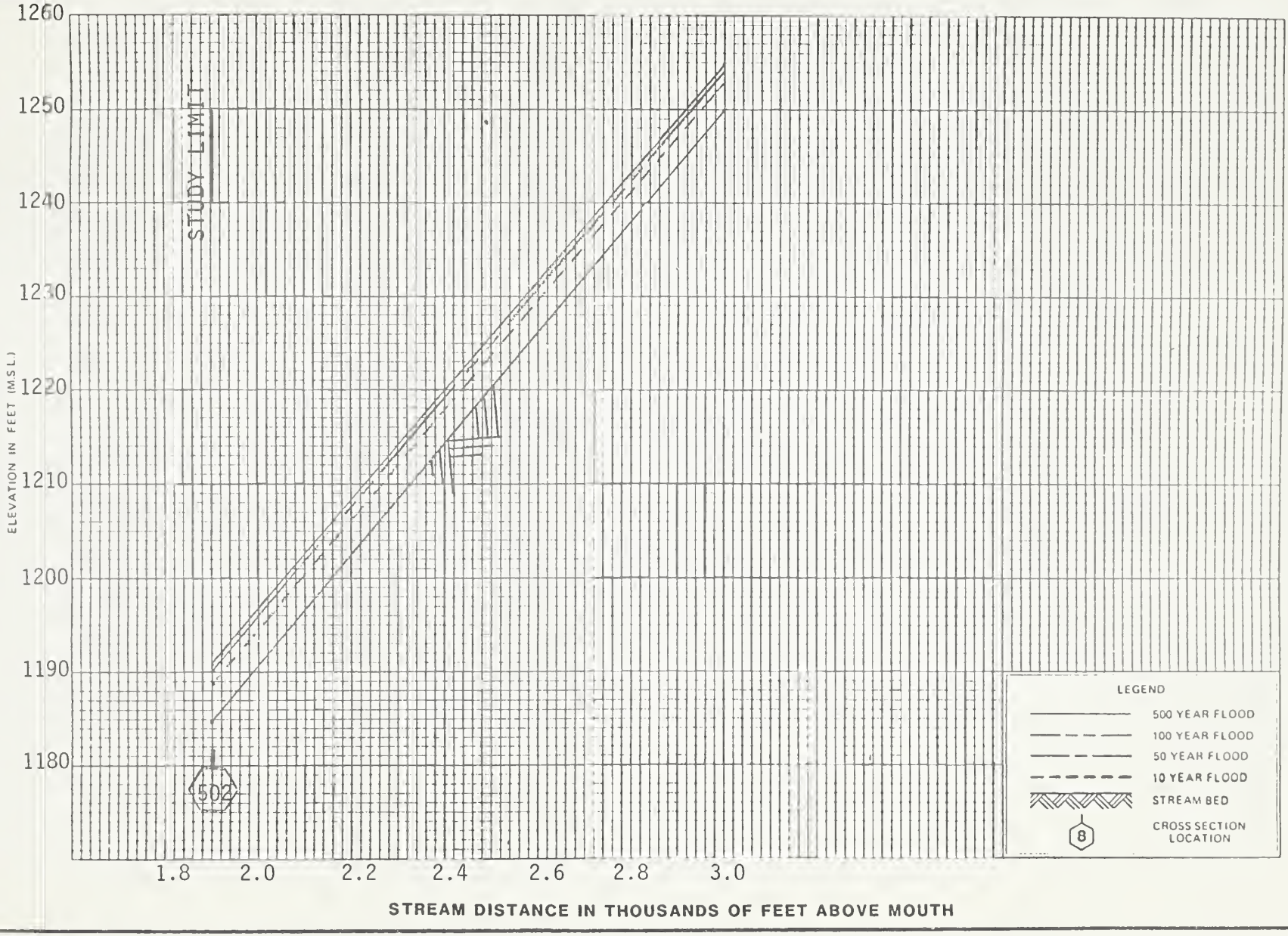
40

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

TANYARD BRANCH

FLOOD PROFILES



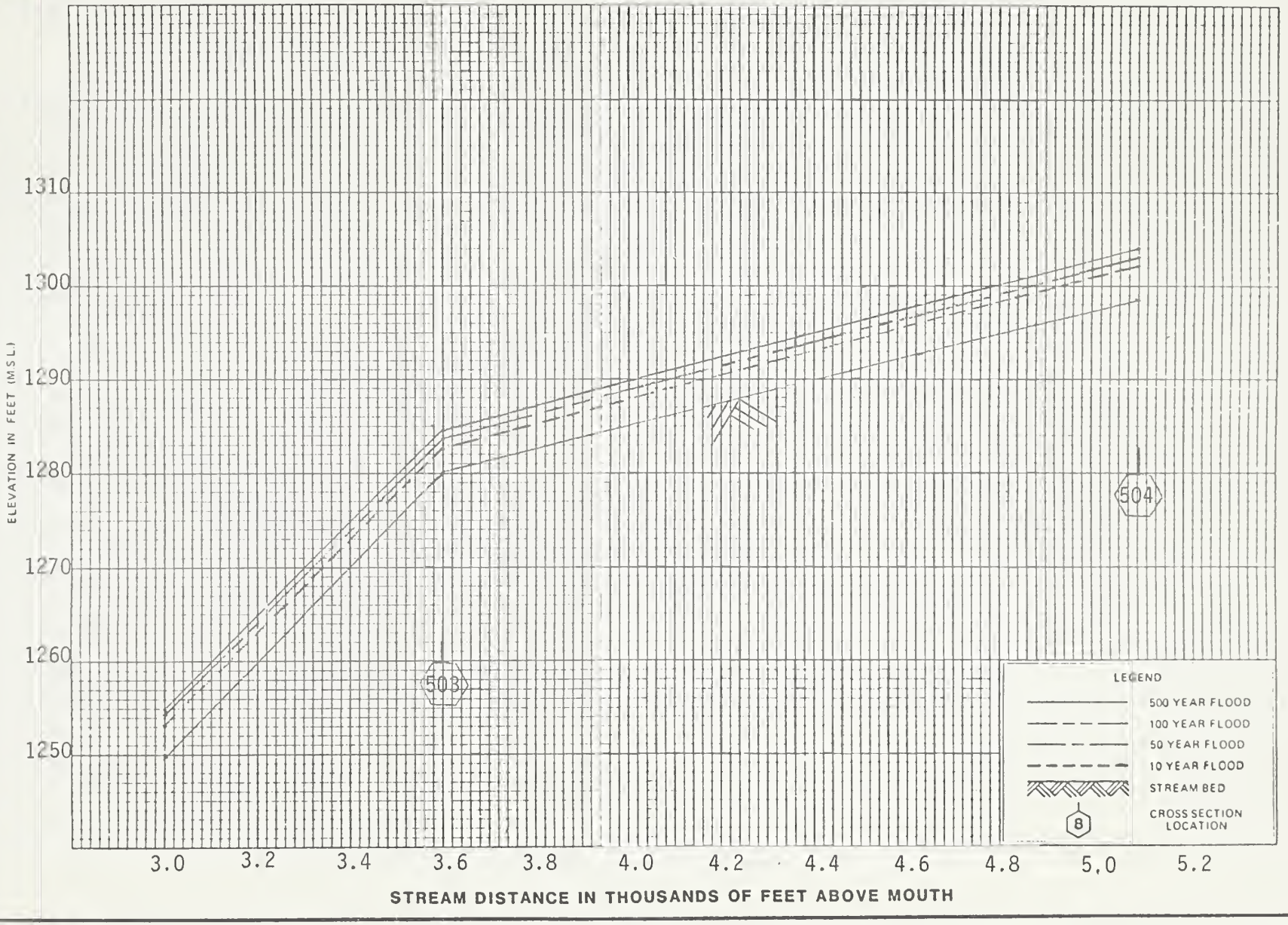
41

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

FLOOD PROFILES

TANYARD BRANCH



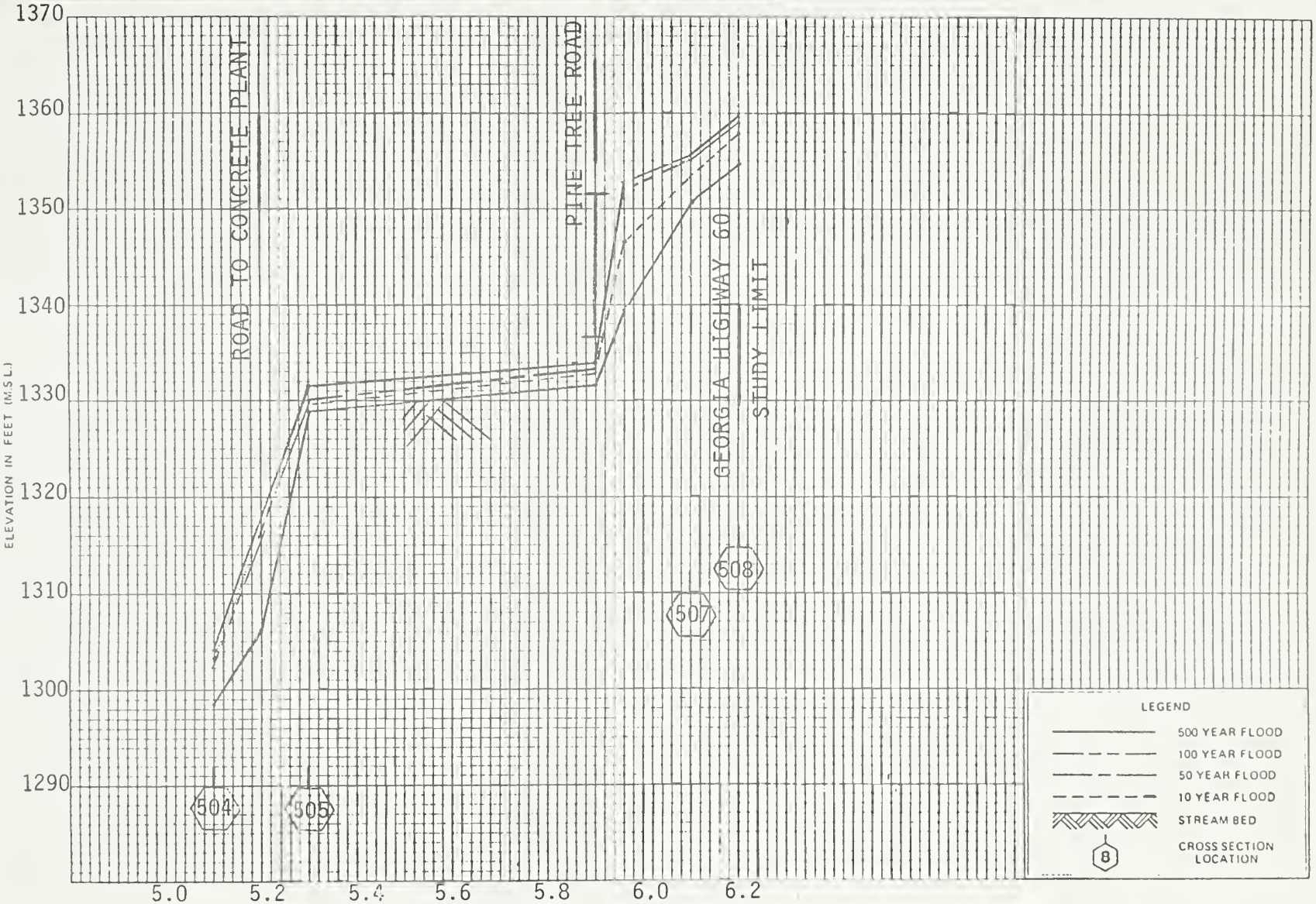
42

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

TANYARD BRANCH

FLOOD PROFILES



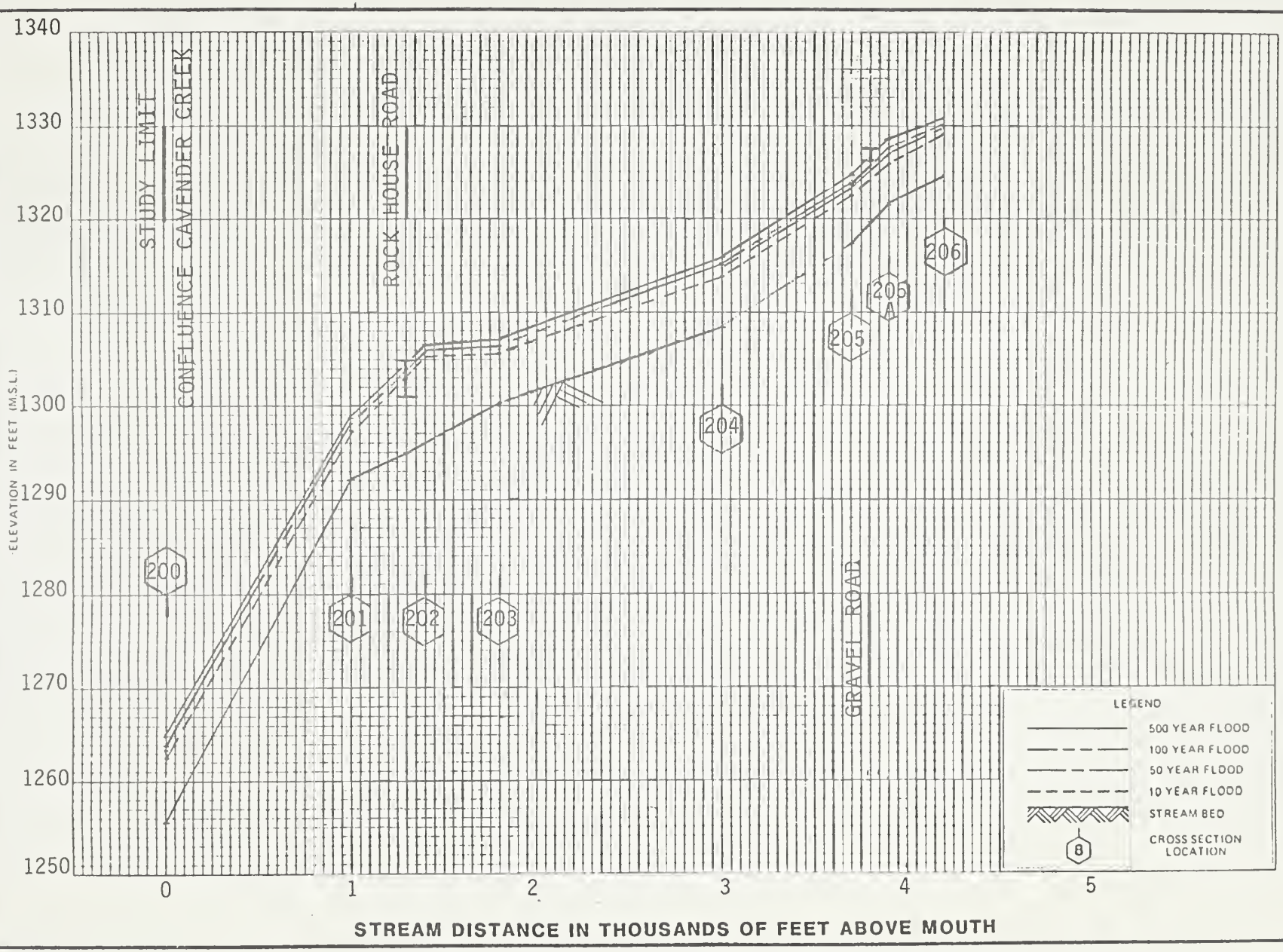
43

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

LEFT FORK CAVENDER'S CREEK

FLOOD PROFILES



U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

FLOOD PLAIN MANAGEMENT STUDY
LUMPKIN COUNTY, GEORGIA

FLOOD PROFILES

LEFT FORK CAVENDER'S CREEK

APPENDIX B

APPENDIX B
WATER SURFACE ELEVATIONS

Road or Cross Section	Distance (Thous.Ft)	Flood Peak Elevations (Feet, MSL) by Recurrence Interval (Years) 10	50	100	500
Yahoola Creek					
Georgia Highway 52	.0	1212.8	1216.1	1217.3	1220.5
8	17.2	1265.8	1269.0	1270.2	1273.0
13	21.4	1273.5	1275.5	1276.6	1279.3
18	30.0	1299.1	1300.8	1301.3	1303.6
21	38.4	1382.4	1384.4	1385.1	1387.0
28	47.8	1494.4	1496.5	1497.1	1498.8
35	56.8	1556.5	1558.0	1558.5	1559.8
40	63.8	1632.1	1632.7	1632.9	1633.5
Ward Creek					
Cavender Creek Church Road	10.7	1303.7	1304.3	1304.5	1305.0
Tributary B					
55	2.6	1308.2	1308.5	1308.7	1309.0
45	4.8	1335.9	1336.8	1337.3	1338.0
Cane Creek					
103	28.3	1181.1	1182.8	1183.5	1185.5
109	35.6	1199.8	1200.6	1200.8	1201.6
117	44.0	1272.6	1273.2	1273.5	1274.2
Tributary C					
302	1.0	1200.9	1202.4	1202.6	1202.9
Happy Hollow Creek					
402	2.0	1200.4	1201.3	1201.7	1202.4
Clay Creek					
137	10.5	1273.5	1274.1	1274.4	1275.1
140	16.7	1289.1	1289.9	1290.2	1290.8
Dowdy Branch					
149	0.5	1267.4	1268.2	1268.5	1269.3
Tributary D					
160	0.8	1263.4	1263.9	1264.1	1264.6
Tanyard Branch					
504	5.1	1302.2	1303.0	1303.3	1304.0
507	6.1	1353.8	1354.9	1355.1	1355.8
Left Fork Cavender's Creek					
201	1.0	1297.3	1297.9	1298.1	1298.6
206	4.2	1329.1	1329.9	1330.2	1331.0

SUMMARY OF DISCHARGES

Flooding Source and Location	Drainage Area (sq.mi.)	Peak Discharges (cfs) 10-Year	50-Year	100-Year	500-Year
Yahoola Creek					
Georgia Highway 52	30.2	5,900	9,150	10,600	14,800
Wimpy Mill Road	22.9	4,850	7,520	8,730	12,100
U.S. Highway 19	21.0	4,640	7,190	8,350	11,600
Cross Section 20	16.5	3,980	6,170	7,160	9,950
Remer Gooch Road	10.5	2,930	4,540	5,270	7,320
Black Mountain Road	2.8	1,010	1,560	1,820	2,520
Ward Creek					
Cavender Creek Church Rd.	4.0	1,340	2,080	2,410	3,350
Tributary B					
Gaddis Road	0.6	290	450	520	720
Cane Creek					
Georgia Highway 9	21.8	4,800	7,440	8,640	12,000
Oak Grove Road	11.0	3,000	4,650	5,400	7,500
Wash Ridder Road	1.6	650	1,010	1,170	1,630
Tributary C					
Cross Section 302	0.3	240	370	430	600
Happy Hollow Creek					
Happy Hollow Road	0.2	180	280	320	450
Clay Creek					
Horton Road	4.0	1,350	2,090	2,430	3,380
Clay Creek Falls Road	8.0	2,380	3,690	4,280	5,950
Dowdy Branch					
Oak Grove Road	0.6	290	450	520	720
Tributary D					
Ranger Camp Road	0.4	210	320	380	520
Tanyard Branch					
Pine Tree Road	0.4	340	530	610	850

APPENDIX C

APPENDIX C
INVESTIGATIONS AND ANALYSES

Survey Procedures

Vertical control was established along stream courses studied using mean sea level datum. Approximately 140 road, bridge, and channel and valley cross sections were surveyed using a telescopic alidade. About 75 elevation reference marks (bench marks) were established. These are listed and described in Appendix D. Distances between cross sections were scaled from aerial photography made by ASCS in November 1980. Surveys were completed in January 1982.

Hydrologic Analyses

Hydrologic analyses were carried out to establish peak discharge-frequency relationships for floods of the 10-year, 50-year, 100-year, and 500-year recurrence intervals. These discharges are based on statistical analysis of discharge records covering a 46-year period at the Chestatee River gaging station operated by USGS. This analysis followed the standard log-Pearson Type III method as outlined by the Water Resources Council's Bulletin No. 17B, revised September 1981. Chestatee River gage has a drainage area of 153 square miles and is located approximately 2.5 miles east of Dahlonega on Georgia Highway 52. It is judged to be hydrologically and geologically similar to the study area.

Chestatee River station discharges were translated to the drainage areas of the study reaches by procedures given in SCS Engineering Handbook, Section 4-Hydrology. A summary of discharges may be found in Appendix B.

Hydraulic Analyses

Elevation-discharge relationships were established using the SCS's water surface profile computer program WSP-2, revised September 1982. The solution consists of backwater computations based on Bernoulli's equation for the total energy at each cross section and Manning's formula for the friction head loss between cross sections. Manning's roughness coefficients ("n" values), which represent the characteristics of the channel and overbank areas, were based on field reconnaissance.

Water surface elevations at road crossing structures were computed assuming unobstructed bridge flow conditions. No consideration was made for openings blocked by debris, future flood plain filling, or other encroachments which could increase flood stages. Selected water surface elevations are tabulated in Appendix B.

The delineated flood hazard area limits are the irregular lines conforming to the area subject to inundation by the 100-year and 500-year floods as shown on photomaps in the report. The 100-year and 500-year flood hazard area widths coincide respectively with the computed 100-year and 500-year water surface profile at cross section locations. Delineations of flood hazard areas between cross sections were made by using stereoscopic aerial photographs and USGS 7½-minute quadrangle sheets.

Natural Values

The 100-year flood plain as described in this study was the base for evaluation of natural resources present.

Detailed study of natural resources and their related values was not conducted. A general field reconnaissance and literature search were conducted. Literature search provided some specific information for this study. Field reconnaissance was made in conjunction with current aerial photos, soil maps, and U.S. Geological Survey quadrangle maps to describe typical plant communities and stream and flood plain habitats. This information should be used only to point out areas where additional surveys should be conducted before an area is developed.

GLOSSARY OF TECHNICAL TERMS

Cross section (stream or valley) - The shape of a channel, stream, or valley, viewed across the axis. In this study it is determined by a line approximately perpendicular to the main path of water flow, along which measurements of distance and elevation are taken to define the cross sectional area.

Drainage area - The area draining into a stream at a given point. The area may be of different sizes for surface runoff, subsurface flow, and base flow, but generally the surface runoff area is used as the drainage area.

Flood - In common usage, an event where a stream overflows its normal banks. In frequency analysis it means an annual flood that may not overflow the banks.

Flood crest - The maximum stage or elevation reached by the waters of a flood at a given location. The discharge at this stage would be the peak discharge.

Flood plain - The areas adjoining a river, stream, watercourse, ocean, lake, or other body of standing water that have been or may be covered by floodwater.

Flood hazard area - Same as flood plain.

Flood profile - A graph showing the relationship of water surface elevation to location, the latter often expressed as distance above mouth for a stream of water flowing in an open channel. It is generally drawn to show surface elevation for the crest of a specific flood.

Frequency or recurrence interval - A measure of how often a hydrologic event of given size or magnitude should, on an average, be equaled or exceeded. For example, a 100-year frequency flood should be equaled or exceeded in size, on the average, once in 100 years. However, this event could take place during any year. In terms of percent chance, this event is called the 1 percent chance flood, and has a 1 percent chance of occurring in any given year.

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2. Chattahoochee River Basin Water Quality Management Plan, Georgia Department of Natural Resources. 1973

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4. Climatological Data-Georgia, NOAA, National Climatic Center.

5. Water Resources Data for Georgia, U.S. Geological Survey.

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8. McCollum, J. L. and D. R. Ettman, Georgia's Protected Plants, Resource Planning Section, OPR, Endangered Plant Program, Atlanta, Georgia. 1977

9. Odum, Ron R., J. L. McCollum, M. A. Neville, and D. R. Ettman, Georgia's Protected Wildlife, Georgia Department of Natural Resources, Game and Fish Division, Social Circle, Georgia. 1977

10. Guidelines for Determining Flood Flow Frequency, U.S. Water Resources Council. September 1981

11. WSP2 Computer Program, Technical Release No. 61, USDA-SCS. Revised September 1982

12. National Engineering Handbook, Section 4, USDA-SCS.

13. Urban Hydrology, Technical Release No. 55, USDA-SCS. January 1975

14. Wetlands of the United States, Circular 39, U.S. Department of the Interior, Fish and Wildlife Service. 1956

APPENDIX D

APPENDIX D
ELEVATION REFERENCE MARKS
(Bench Marks)

Identification	Elevation (Feet, MSL)	Description
TBM 2	1245.1	Chiseled "x" on northwest end of bridge at Georgia Highway 52 crossing on Yahoola Creek.
TBM 5	1298.5	Nail and tag in utility pole 100 feet downstream from Rockhouse Road and 200 feet east from east bank of left fork of Cavenders Creek.
TBM 7	1337.8	Nail and tag in fence post at gate 30 feet east of dirt road and 400 feet west of left fork of Cavenders Creek.
TBM 8	1330.2	Nail and tag in utility pole at pond at the intersection of Cavender Creek Church Road and gravel road.
TBM 9	1397.1	Nail and tag in 10-inch diameter, forked white oak tree 200 feet west of pond dam.
TBM 11	1188.3	Chiseled square on northwest corner of bridge at Georgia Highway 9 crossing of Cane Creek.
TBM 13	1188.5	Nail and tag in 12-inch diameter poplar tree 10 feet south of south bank of Clay Creek at cross section 132.
TBM 14	1205.0	Nail and tag in 24-inch diameter poplar tree 20 feet west of Clay Creek Falls Road at cross section 133.
TBM 15	1274.0	Nail and tag in 15-inch diameter poplar tree on east side of Clay Creek Falls Road behind Pruitt's Body Shop.
TBM 16	1263.3	Nail and tag in utility pole at bridge crossing Clay Creek on Clay Creek Falls Road.
TBM 17	1270.8	Nail and tag in 15-inch diameter birch tree on south bank of Clay Creek and 200 feet upstream from cross section 137.
TBM 18	1283.5	Nail and tag in 15-inch diameter poplar tree on shoulder of Seabolt Road at cross section 151.
TBM 20	1325.0	Nail and tag in utility pole No. 36. Pole is on south shoulder of Oak Grove Road and 100 feet east of east bank of Dowdy Branch.

Identification	Elevation (Feet, MSL)	Description
TBM 21	1277.1	Nail and tag in tree at property line corner. Tree is 10 feet west from west bank of Clay Creek and 50 feet downstream from confluence with Tributary E.
TBM 22	1303.8	Nail and tag in a utility pole at Silome Church Road crossing of Tributary E.
TBM 23	1283.9	Nail and tag in 18-inch diameter maple tree 5 feet east of east bank of Clay Creek at old wooden bridge.
TBM 24	1291.0	Nail and tag in tree 125 feet west from west end of bridge crossing Clay Creek on Horton Road.
TBM 25	1294.3	Nail and tag in 18-inch diameter walnut tree on west bank of Clay Creek 100 feet upstream from cross section 143.
TBM 26	1308.1	Nail and tag in utility pole No. 66. Pole is 50 feet south of centerline of Oak Grove Road on east side of Clay Creek.
TBM 27	1197.2	Nail and tag in utility pole No. 4. Pole is 40 feet west of dirt road at cross section 101.
TBM 29	1172.7	Nail and tag in birch tree which is 10 feet west of west bank of Cane Creek at cross section 100.
TBM 31	1211.9	Nail and tag in utility pole No. 12. Pole is 150 feet west of west bank of Cane Creek at intersection of Oak Grove Road and dirt road.
TBM 32	1188.3	Nail and tag in 8-inch diameter poplar tree 5 feet west of west bank of Cane Creek at cross section 108.
TBM 33	1210.3	Nail and tag in utility pole at right side of entrance to Holland House at Camp Glisson.
TBM 35	1258.3	Nail and tag in utility pole on east bank of Cane Creek 50 feet upstream from cross section 114.
TBM 36	1266.3	Nail and tag in 8-inch diameter elm tree 25 feet east of east bank of Tributary D and 10 feet south from centerline of dirt road.

Identification	Elevation (Feet, MSL)	Description
TBM 37	1308.7	Nail and tag in fence post 50 feet east of east bank of Little Cane Creek and 25 feet south of Wash Ridder Road.
TBM 38	1299.8	Nail and tag in 8-inch diameter poplar tree 50 feet south of Ranger Camp Road on east bank of Tributary D.
TBM 39	1287.6	Nail and tag in utility pole in pasture about 50 feet downstream from cross section 121.
TBM 40	1279.9	Nail and tag in utility pole No. 10. Pole is 25 feet south of Norrels Road.
TBM 41	1278.1	Nail and tag in 18-inch diameter poplar tree which is 75 feet north of field road on east bank of Cane Creek.
TBM 44	1224.2	Nail and tag in 6-inch diameter persimmon tree 400 feet east from east bank of Ward Creek at cross section 64.
TBM 45	1229.4	Nail and tag in 36-inch diameter poplar tree on south bank of Ward Creek, 50 feet downstream from cross section 65.
TBM 46	1282.7	Nail and tag in 12-inch diameter ash tree on east side of Ward Creek 50 feet upstream from cross section 66.
TBM 47	1308.2	Nail and tag in 30-inch diameter poplar tree 200 feet east of east bank of Ward Creek at Cavender Creek Church Road.
TBM 50	1250.6	Chiseled square on northeast corner of bridge crossing Yahoola Creek at Wimpy Mill Road.
TBM 51	1262.7	Nail and tag in 10-inch diameter poplar tree 50 feet northwest from Yahoola Creek at cross section 8.
TBM 52	1285.2	Nail and tag in 12-inch diameter sweetgum tree 50 feet northwest of Tributary A at cross section 61.
TBM 53	1287.3	Chiseled square on east wingwall of bridge crossing Yahoola Creek on U.S. Highway 19.

Identification	Elevation (Feet, MSL)	Description
TBM 55	1275.4	Nail and tag in 12-inch diameter poplar tree on west side of field road at cross section 13 on Yahoola Creek.
TBM 58	1317.0	Nail and tag in 14-inch diameter poplar tree on north side of Tributary B at cross section 55.
TBM 60	1352.2	Nail and tag in utility pole in front of Brown residence on Gaddis Road.
TBM 61	1411.0	Nail and tag in utility pole No. 3 between two chicken houses. Pole is 60 feet west of Duffy Grizzle Road near cross section 57 on Tributary B.
TBM 63	1284.9	Nail and tag in 12-inch diameter twin oak tree 25 feet north of dirt road near cross section 14 on Yahoola Creek.
TBM 64	1289.3	Nail and tag in 12-inch diameter poplar tree 160 feet south of Duffy Grizzle Road on side of dirt road near cross section 15 on Yahoola Creek.
TBM 65	1301.8	Nail and tag in utility pole with transformer atop. Pole is on east side of Jarrard Road opposite chicken house.
TBM 66	1296.9	Nail and tag in utility pole on north side of Yahoola Creek at fork in dirt road.
TBM 68	1313.2	Nail and tag in utility pole about 200 feet northeast from Yahoola Creek near cross section 20.
TBM 69	1515.4	Nail and tag in utility pole 200 feet east of east bank of Yahoola Creek at cross section 22.
TBM 70	1527.9	Nail and tag in 24-inch diameter white oak tree 500 feet east of east bank of Yahoola Creek. Tree is between two fences near the property line.
TBM 71	1536.5	Chiseled "x" on east wingwall of bridge at dirt road crossing of Yahoola Creek.
TBM 72	1550.1	Nail and tag in 24-inch diameter poplar tree about 100 feet east of east bank of Yahoola Creek.
TBM 73	1552.9	Nail and tag in gate post in front of chicken house on east side of Yahoola Creek near cross section 32.

Identification	Elevation (Feet, MSL)	Description
TBM 74	1556.6	Nail and tag in 36-inch diameter poplar tree about 50 feet west of west bank of Yahoola Creek near cross section 35.
TBM 76	1605.1	Nail and tag in utility pole at intersection of Pat Gooch Road and Black Mountain Road.
TBM 77	1634.7	Nail and tag in utility pole No. 3 in pasture about 200 feet east of east bank of Robison Creek.
TBM 78	1607.7	Chiseled square on west, downstream corner of bridge at Black Mountain Road crossing of Yahoola Creek.
TBM 80	1631.8	Nail and tag in 14-inch diameter poplar tree on west bank of Yahoola Creek. Tree is one of three in a cluster.
TBM 81	1673.9	Chiseled square on downstream top of 60-inch diameter concrete pipe at dirt road crossing of Yahoola Creek. Road is about 100 feet upstream from cross section 42.
TBM 82	1389.4	Nail and tag in 14-inch diameter hemlock tree about 150 feet west of west bank of Yahoola Creek at cross section 21.
TBM 85	1183.2	Nail and tag in 18-inch diameter locust tree on north bank of Happy Hollow Creek about 350 feet upstream from Torrington Road bridge.
TBM 87	1268.5	Nail and tag in 10-inch diameter pine tree about 125 feet south of south bank of Happy Hollow Creek at cross section 403.
TBM 88	1270.4	Nail and tag in utility pole No. 16 on Happy Hollow Road at Happy Hollow Creek.
TBM 90	1209.6	Nail and tag in 18-inch diameter forked beech tree 60 feet south of south bank of Tributary C at cross section 302.
TBM 91	1255.2	Nail and tag in 24-inch diameter white oak tree between Georgia Highway 9 and Tributary C. Tree is 200 feet south of Georgia Highway 9 at cross section 303.

Identification	Elevation (Feet, MSL)	Description
TBM 93	1276.8	Chiseled square on top of upstream end of 24-inch diameter concrete pipe. Pipe is at the crossing of the road to the sanitary landfill on Tributary C.
TBM 96	1400.1	Chiseled "x" on top of downstream concrete at College Ridge Road crossing on Tributary C.
TBM 98	1192.7	Nail and tag in utility pole No. 249 about 17 feet north of north bank of Tanyard Branch near cross section 502.
TBM 99	1328.0	Nail and tag in utility pole No. 253 between sewage treatment plant and ball field. Pole is near cross section 503 on Tanyard Branch.
TBM 100	1315.5	Nail and tag in utility pole on north side of Tanyard Branch near cross section 504. Pole is on east side of road to concrete plant.
TBM 102	1362.0	Nail and tag in utility pole No. 85 at intersection of Pine Tree Road and Park Street. Pole supports three transformers and a street light.